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ABSTRACT

This is volume five of a series produced by the New York State Education Department. Originally developed by four local school districts, the mathematics objectives and sample items are not intended to be official or comprehensive, but to be an aid to teachers in constructing curricula and in making classroom goals clear and precise. The document presents a series of 281 examples, each of which states an objective and gives a sample item. The objectives are classified into 13 sections: sets; number, numeral, and numeration systems; whole numbers; fractions (positive rationals); decimals; integers; real numbers; ratio, proportion, and percent; measurement; geometry; problem solving/word problems; algebra; and statistics and probability. For related documents in this series, see ED 064 165, ED 064 166, ED 064 167, and SE 014 469. (DT)

PROJECT SPPED

System for Program and Pupil Evaluation and Development

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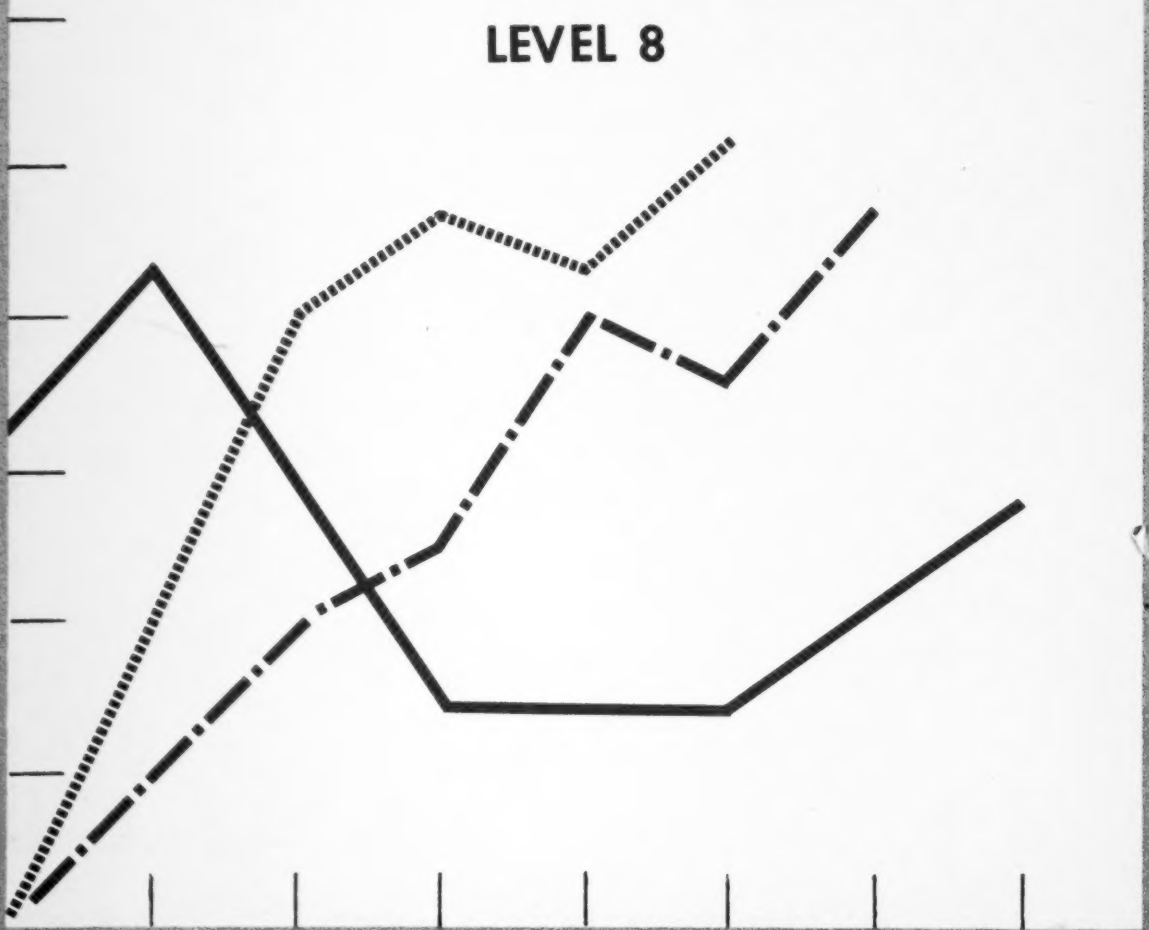
MATHEMATICS OBJECTIVES

LEVEL 8



The University of the State of New York
THE STATE EDUCATION DEPARTMENT
Bureau of School and Cultural Research
Albany, New York 12224
1972

ED 067258

MATHEMATICS OBJECTIVES FOR LEVEL 8

Project SPPED

System for Pupil and Program Evaluation and Development

Volume V

University of the State of New York
State Education Department
Albany, New York 12224

FOREWORD

The mathematics objectives and items in this packet were originally developed by four local school districts who were participating in CAM projects sponsored by the New York State Education Department. They were refined, checked for quality, and organized by Gerlach van Gendt of the Bureau of School and Cultural Research with assistance from Lee Negus of the Bureau of Mathematics Education.

These objectives are not an official or endorsed set of Mathematics Objectives. Nor do they claim to be comprehensive (i.e., covering all material in the relevant grade levels).

Nonetheless, it is our hope that many teachers will find these objectives useful and helpful in constructing curricula for their classes. These objectives can help you, as a teacher, make vague classroom goals clear and precise. But, the responsibility for what is taught is still the teacher's.

Seta

		6 4 4 4 0	

OBJECTIVE: Given two sets, the student will list their union or intersection.

SAMPLE ITEM: $A = \{0,1,2,3\}$ $B = \{2,3,4\}$
(a) Find $A \cup B$
(b) Find $A \cap B$

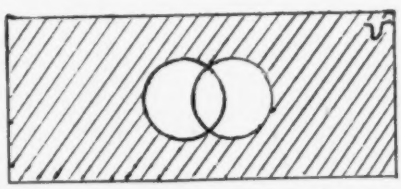
Answer: (a) $\{0,1,2,3,4\}$
(b) $\{2,3\}$

Level 8 Classification - Sets, Union and Intersection/Disjoint/Pictorial Representation	41 Descriptor - Intersection and Union of Sets Role, Student

		6 4 4 4 5	

OBJECTIVE: Given a Venn diagram, the student will identify the shaded region.

SAMPLE ITEM: Identify the shaded region:



Answer: $(A \cup B)'$ or $\overline{(A \cup B)}$ or the complement of $(A \cup B)$

Level 8 Classification - Sets, Union and Intersection/Disjoint/Pictorial Representation	41 Descriptor - Pictorial Representation of Sets Role, Student

		6 4 4 5 5	

OBJECTIVE: Given a universal set, the student will list the indicated subset.

SAMPLE ITEM: Given U = $\{0,1,2,3,...\}$

List the subset of even whole numbers.

Answer: $\{0,2,4,...\}$

Level 8 Classification - Sets - Subsets - Empty Sets	41 Descriptor - Determining Subsets Role, Student

		6 4 4 6 0	

OBJECTIVE: Given a set containing two members, the student will list all possible proper subsets of the set.

SAMPLE ITEM: Write all of the possible proper subsets of the set:

$\{5, 6\}$

Answer: $\{5\}$ $\{6\}$ $\{\ \}$ or $\varnothing$

Level 8 Classification - Sets - Subsets - Empty Sets	41 Descriptor - Determining Subsets Role, Student

		6 4 4 6 5	

OBJECTIVE: Given a set of elements, the student will identify subsets of the set.

SAMPLE ITEM: Write 3 subsets of the following set:

$\{a, b, c\}$

Answer: Any (3) of the following:

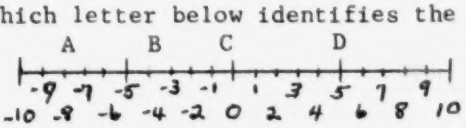
$\{a\}$ $\{a, b\}$ $\{a, b, c\}$
$\{b\}$ $\{a, c\}$ $\{\}$ or $\emptyset$
$\{c\}$ $\{b, c\}$

Level 8 Classification - Sets - Subsets - Empty Sets	41 Descriptor - Determining Subsets Role, Student

		6 4 4 7 0	

OBJECTIVE: Given a number line with lettered units, the student will identify stated negative and positive points.

SAMPLE ITEM: Which letter below identifies the point -4?



Answer: B

Level 8 Classification - Number, numeral, and Numeration Systems - Number Line/Inequalities	41 Descriptor - Number Line Labeling Role, Student

Number, Numeral, and Numeration Systems

		6 4 4 7 5		

OBJECTIVE: Given a series of negative integers, the student will identify which has the greater value.

SAMPLE ITEM: Which number has the greatest value?

-4, -3, -2, -9

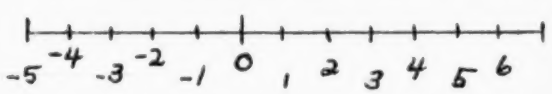
Answer: -2

Level 8 Classification - Number, Numeral, and Numeration Systems - Number Line/ Inequalities	41 Descriptor - Inequalities on Whole Numbers Role, Student

		6 4 4 8 0		

OBJECTIVE: On a number line, the student will compute the number of units between two given numbers (positive).

SAMPLE ITEM: Using the number line below, what would the answer to the expression 3-4 be?



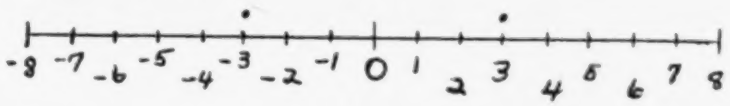
Answer: -1

Level 8 Classification - Number, Numeral, and Numeration Systems - Number Line/ Inequalities	41 Descriptor - Subtraction on Number Line Role, Student

		6 4 4 8 5		

OBJECTIVE: On a number line, the student will compute the number of units between two given points, (one pos., one neg.).

SAMPLE ITEM: What is the difference between the two points marked below?



Answer: 6

Level 8
Classification - Number, Numeral, and Numeration Systems - Number Line/ Inequalities

41 Descriptor - Subtraction on Number Line

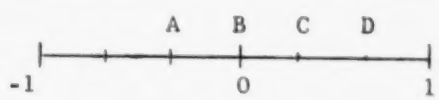
Role, Student

		6 4 4 9 0		

OBJECTIVE: Given a negative rational number, the student will identify the point on a number line that corresponds to the given negative rational.

SAMPLE ITEM: Which letter, on the number line, corresponds to

$-\frac{1}{3}$?



Answer: A

Level 8
Classification - Number, Numeral, and Numeration Systems - Number Line/ Inequalities

41 Descriptor - Number Line Labeling

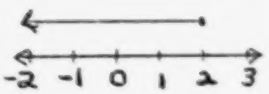
Role, Student

		6 4 4 9 5	

OBJECTIVE: Given an equation in the form X $\leq$ 4, the student will identify the correct graph on a number line.

SAMPLE ITEM: Draw the graph that represents: X $\leq$ 2

Answer:



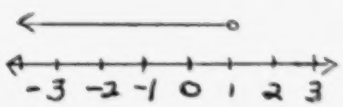
Level 8 Classification - Number, Numeral, and Numeration Systems - Number Line/ Inequalities	41 Descriptor - Inequalities on Number Line Role, Student

		6 4 5 0 0	

OBJECTIVE: Given an inequality in the form X<4, the student will identify the correct graph on a number line.

SAMPLE ITEM: Draw the graph that represents: X<1

Answer:



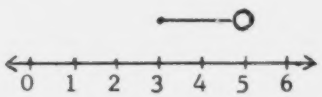
Level 8 Classification - Number, Numeral, and Numeration Systems - Number Line/ Inequalities	41 Descriptor - Inequalities on Number Line Role, Student

		6 4 5 0 5	

OBJECTIVE: Given an expression $\{x \mid 3 \leq x < 5\}$ the student will identify the correct graph on a number line.

SAMPLE ITEM: Draw the graph that represents: $3 \leq x < 5$

Answer:



Level 8 Classification - Number, Numeral, and Numeration Systems - Number Line/ Inequalities	41 Descriptor - Inequalities on Number Line Role, Student

		6 4 5 1 0	

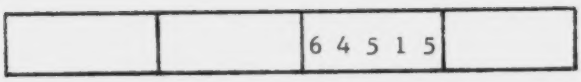
OBJECTIVE: Given a 7-digit whole number with one digit underlined, the student will write the place value of the underlined digit.

SAMPLE ITEM: Identify by writing the correct place value of the underlined digit:

1,56<u>7</u>,293

Answer: Thousands

Level 8 Classification - Number, Numeral, and Numeration Systems - Number Line/ Inequalities	41 Descriptor - Place Value Role, Student



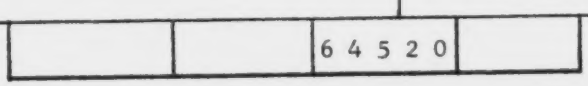
OBJECTIVE: Given a number in expanded notation, the student will rewrite it as a decimal numeral.

SAMPLE ITEM: Rewrite the following as a decimal numeral:

$(7 \times 10^3) + (8 \times 10^2) + (5 \times 10^1) + (6 \times 10^0)$

Answer: 7856

Level 8 Classification - Number, Numeral, and Numeration Systems - Place Value	41 Descriptor - Expanded Notation Role, Student



OBJECTIVE: Given a decimal numeral, the student will rename the numeral in scientific notation.

SAMPLE ITEM: Express 30,900 in scientific notation.

Answer: 3.09×10^4

Level 8 Classification - Number, Numeral, and Numeration Systems - Scientific Notation	41 Descriptor - Scientific Notation Role, Student

1579

		6 4 5 2 5	

OBJECTIVE: Given a number in scientific notation, the student will rewrite it as a decimal numeral.

SAMPLE ITEM: Rewrite 4.2×10^3 as a decimal numeral.

Answer: 4,200

Level 8 Classification - Number, Numeral, and Numeration Systems - Scientific Notation	41 Descriptor - Scientific Notation Role, Student

		6 4 5 3 0	

OBJECTIVE: Given a word problem with rational numbers, the student will compute and write the answer in scientific notation.

SAMPLE ITEM: Mercury is 3.6×10^7 miles from the sun, Venus is 6.7×10^7 miles from the sun. If they are in line with the sun, and on the same side of it, how far is Mercury from Venus? Write the answer in scientific notation.

Answer: 3.1×10^7 miles

Level 8 Classification - Number, Numeral, and Numeration Systems - Scientific Notation	41 Descriptor - Scientific Notation Role, Student

Whole Numbers

		6 4 5 3 5		

OBJECTIVE: Given a list of six addends or four digits or less, the student will compute and write the sum.

SAMPLE ITEM: Find the sum

4,396
5,430
9,678
3,469
5,421
8,365

Answer: 36,759

Level 8 Classification - Whole Numbers - Addition	41 Descriptor - Adding Whole Numbers Role, Student

		6 4 5 4 0		

OBJECTIVE: Given a minuend and a subtrahend of four digits or less, the student will compute and write the difference.

SAMPLE ITEM: Find the difference: 7006 — 4328 =

Answer: 2678

Level 8 Classification - Whole Numbers - Subtraction	41 Descriptor - Subtraction - 4 digits or less Role, Student

		6 4 5 4 5		

OBJECTIVE: Given two factors or four digits or less, the student will compute and write the product.

SAMPLE ITEM: Compute and write the product: 304 x 528 =

Answer: 160,512

Level 8 Classification: Whole Numbers - Multiplication	41 Descriptor - Multiplication of Whole Numbers Role, Student

		6 4 5 5 0		

OBJECTIVE: Given a divisor of two or more digits and a dividend of four or more digits, the student will compute and write the quotient.

SAMPLE ITEM: Compute and write the quotient to the following:

$4800 \div 60$

Answer: 80

Level 8 Classification: Whole Numbers - Division	41 Descriptor - Division Without Remainder Role, Student

		6 4 5 5 5	

OBJECTIVE: Given a set of integers, the student will compute and write the greatest common factor (G.C.F.).

SAMPLE ITEM: Compute and write the greatest common factor of the following integers:

– 24, 20, 68

Answer: 4

Level 8 Classification: Whole Numbers - Factors/Common Factors/G.C.F./ Divisibility Rules	41 Descriptor - Greatest Common Factor Role, Student

		6 4 5 6 0	

OBJECTIVE: Given two integers, the student will compute and write the least common multiple (L.C.M.).

SAMPLE ITEM: Compute and write the least common multiple of

16 and 20.

Answer: 80

Level 8 Classification: Whole Numbers - Multiples/Common Multiples/L.C.M.	41 Descriptor - Lowest Common Multiple Role, Student

		6 4 5 6 5		

OBJECTIVE: Given a set of integers, the student will write the composite or prime numbers.

SAMPLE ITEM: Given the following set of numbers, choose and write the prime numbers:

10, 8, 23, 16, 13

Answer: 23, 13

Level 8 Classification: Whole Numbers - Prime Composite	41 Descriptor - Identifying Numbers as Prime or Composite Role, Student

		6 4 5 7 0		

OBJECTIVE: Given an integer, the student will write the complete prime factorization of that number.

SAMPLE ITEM: Write the complete prime factorization of the following number:

72

Answer: $2 \times 2 \times 2 \times 3 \times 3$ or $2^3 \times 3^2$

Level 8 Classification: Whole Numbers - Prime Composite	41 Descriptor - Prime Factorization Role, Student

		6 4 5 7 5	

OBJECTIVE: Given a rational number, the student will write the prime factorization of the numerator and denominator of the rational number.

SAMPLE ITEM: Write the prime factorization of the numerator and denominator of $\frac{10}{15}$.

Answer: $\frac{5 \cdot 2}{5 \cdot 3}$

Level 8 Classification: Whole Numbers - Prime/Composite	41 Descriptor - Prime Factorization Role, Student

		6 4 5 8 0	

OBJECTIVE: Given a rational number already prime-factored, the student will reduce it to lowest terms.

SAMPLE ITEM: Reduce to lowest terms: $\frac{2.2.3}{5.3}$

Answer: $\frac{4}{5}$

Level 8 Classification: Whole Numbers - Prime/Composite	41 Descriptor - Reducing Rationals Already Prime Factored Role, Student

Fractions (Positive Rationals)

587

		6 4 5 8 5	

OBJECTIVE: Given a series of numbers which contain a rational number, the student will be able to identify the rational number from the series.

SAMPLE ITEM: Which of the following is a rational number?

$\sqrt{13}$, $\frac{5}{12}$, π, $-\pi$

Answer: $\frac{5}{12}$

Level 8
Classification: Fractions (Positive Rationals) - Basic Concepts

41 Descriptor - Identifying Proper/Improper Fractions

Role, Student

		6 4 5 9 0	

OBJECTIVE: Given an addition example with four or less addends, the student will compute and write the sum.

SAMPLE ITEM: Find the sum of the following addends in lowest terms:

$$\frac{4}{5} + \frac{3}{4} + \frac{1}{2} =$$

Answer: $2\ \frac{1}{20}$

Level 8
Classification: Fractions (Positive Rationals) - Addition

41 Descriptor - Adding Unlike Fractions

Role, Student

		6 4 5 9 5	

OBJECTIVE: Given two or more fractions, the student will add, subtract, or combine them and express the result in lowest terms.

SAMPLE ITEM: $\frac{3}{4} + \frac{1}{8} - \frac{1}{2}$

Answer: $\frac{3}{8}$

Level 8 Classification: Fractions (Positive Rationals) - Subtraction	41 Descriptor - Addition and Subtraction of Fractions Role, Student

		6 4 6 0 0	

OBJECTIVE: Given two or more fractions, the student will multiply or divide them and express the result in lowest terms.

SAMPLE ITEM: $\frac{3}{4} \times \frac{6}{7} \div \frac{9}{14}$

Answer: 1 or $\frac{1}{1}$

Level 8 Classification: Fractions (Positive Rationals) - Division	41 Descriptor - Multiplying and Dividing Fractions Role, Student

		6 4 6 0 5	

OBJECTIVE: Given an addition (or multiplication) example with rational numbers the student will rewrite the example using the commutative property.

SAMPLE ITEM: Rewrite the following example using the commutative property:

$$\frac{16}{25} \times \frac{11}{12}$$

Answer: $\frac{11}{12} \times \frac{16}{25}$

Level 8 Classification: Fractions (Positive Rationals) - Properties/Reciprocals/Multicative Inverse	41 Descriptor - Commutative Property, Fractions Role, Student

		6 4 6 1 0	

OBJECTIVE: Given an addition (or multiplication) example with rational numbers, the student will rewrite the example using the associative property.

SAMPLE ITEM: Rewrite the following example using the associative property of addition:

$$(\frac{5}{8} + \frac{1}{4}) + \frac{3}{4}$$

Answer: $\frac{5}{8} + (\frac{1}{4} + \frac{3}{4})$

Level 8 Classification: Fractions (Positive Rationals) - Properties/Reciprocals/Multicative Inverse	41 Descriptor - Associative Property, Fractions Role, Student

		6 4 6 1 5	

OBJECTIVE: Given an example with rational numbers, the student will rewrite the example using the distributive property.

SAMPLE ITEM: Rewrite the following expression using the distributive property of multiplication over addition.

$$(\frac{2}{3} \times \frac{3}{7}) + (\frac{2}{3} \times \frac{5}{8})$$

Answer: $\frac{2}{3} \times (\frac{3}{7} + \frac{5}{8})$

Level 8 Classification: Fractions (Positive Rationals) - Properties/Reciprocals/Multicative Inverse	41 Descriptor - Distributive Property, Fractions Role, Student

		6 4 6 2 0	

OBJECTIVE: Given a set of rational numbers, the student will write the operations for which the set is closed. The operations will be addition, subtraction, multiplication, or division.

SAMPLE ITEM: For what operation is $\{1,3,5...\}$ closed? Choose from addition, subtraction, multiplication, or division.

Answer: Multiplication

Level 8 Classification: Fractions (Positive Rationals) - Equivalent Fractions	41 Descriptor - Closure Fractions Role, Student

		6 4 6 2 5	

OBJECTIVE: Given a series of integers and decimal numbers, the student will compute the sum.

SAMPLE ITEM: Add: 3, .3, .5, .9, .6, and .8

Answer: 6.1

Level 8 Classification: Decimals - Addition	41 Descriptor - Adding Decimals Role, Student

Decimals

		6 4 6 3 0		

OBJECTIVE: Given a series of positive and negative decimals the student will compute the sum.

SAMPLE ITEM: Add: -6.8, $-.23$, 29.37, and -5.62

Answer: 16.72

Level 8 Classification: Decimals - Addition	41 Descriptor - Adding Decimals Role, Student

		6 4 6 3 5		

OBJECTIVE: Given two or more decimal fractions, the student will add or subtract them.

SAMPLE ITEM: $(15.321 + 6.109) - 4.329$

Answer: 17.101

Level 8 Classification: Decimals - Subtraction	41 Descriptor - Adding and Subtracting Decimals Role, Student

		6 4 6 4 0	

OBJECTIVE: Given two or more decimal fractions, the student will multiply or divide them.

SAMPLE ITEM: (.234) (.45) $\div$ .25

Answer: .4212

Level 8 Classification: Decimals - Division	41 Descriptor - Multiplying or Dividing Decimals Role, Student

		6 4 6 4 5	

OBJECTIVE: Given a set of decimal fractions, the student will identify and write the terminating decimal fraction.

SAMPLE ITEM: Of the four choices below, write the letter of the choice which labels a terminating decimal fraction;

A. 0.2929
B. 0.2929 ...
C. $0.29\overline{29}$
D. 0.29303132 ...

Answer: A

Level 8 Classification: Decimals - Repeating and Terminating	41 Descriptor - Repeating and Terminating Decimals Role, Student

		6 4 6 5 0	

OBJECTIVE: Given a set of decimal fractions, the student will select and write the repeating decimal fraction.

SAMPLE ITEM: Of the four choices below write the letter of the choice which labels a repeating decimal:

A. 0.12112211122211112222
B. 0.123456789
C. 0.111222111222111222 ...
D. 0.345345634567

Answer: C

Level 8 Classification: Decimals - Repeating and Terminating	41 Descriptor - Repeating and Terminating Decimals Role, Student

		6 4 6 5 5	

OBJECTIVE: Given a list of five negative decimals, the student will line them in order from smallest to largest value.

SAMPLE ITEM: Put in order from smallest to largest value:

-5.42, -5.43, -0.57, -54.3 and -5.7

Answer: -54.3, -5.7, -5.43, -5.42 and -0.57

Level 8 Classification: Decimals - Order (comparing Fractions)	41 Descriptor - Comparing Decimal Fractions Role, Student

		6 4 6 6 0	

OBJECTIVE: Given a list of five positive and negative decimals, the student will list them in the order from smallest to largest value.

SAMPLE ITEM: List in order: 1.75, −1.75, 2.8, −2.8 and .3 from smallest to largest value.

Answer: −2.8, −1.75, .3, 1.75 and 2.8

Level 8
Classification: Decimals - Order (comparing Fractions)

41 Descriptor - Comparing Decimal Fractions

Role, Student

Integers

[illegible]59832

		6 4 6 6 5		

OBJECTIVE: Given an addition example with integers with like signs, the student will compute and write the sum.

SAMPLE ITEM: Compute and write the sum: $(-10) + (-23)$

Answer: -33

Level 8 Classification: Integers - Addition	41 Descriptor - Addition of Integers with Like Signs Role, Student

		6 4 6 7 0	

OBJECTIVE: Given an addition example with integers with unlike signs, the student will compute and write the sum.

SAMPLE ITEM: Find the sum: + 42 + (−57)

Answer: −15

Level 8 Classification: Integers - Addition	41 Descriptor - Addition of Integers with Unlike Signs Role, Student

		6 4 6 7 5	

OBJECTIVE: Given a series of mixed positive and negative integers, the student will compute the sum.

SAMPLE ITEM: Add: (−5) + (−7) + (+6) + (+7)

Answer: 1

Level 8 Classification: Integers - Addition	41 Descriptor - Addition of Integers with Unlike Signs Role, Student

		6 4 6 8 0	

OBJECTIVE: Given a problem with one positive and one negative integer in which the absolute value of the positive integer is greater than the absolute value of the negative integer, the student will find the sum.

SAMPLE ITEM: Add: (-8) + (+10)

Answer: +2

Level 8 Classification: Integers - Addition	41 Descriptor - Addition of Integers with Unlike Signs Role, Student

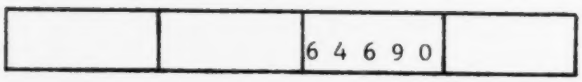
		6 4 6 8 5	

OBJECTIVE: Given a problem with one positive and one negative integer in which the absolute value of the negative integer is greater than the absolute value of the positive integer, the student will compute the sum.

SAMPLE ITEM: (-7) + (3) =

Answer: -4

Level 8 Classification: Integers - Addition	41 Descriptor - Addition of Integers with Unlike Signs Role, Student

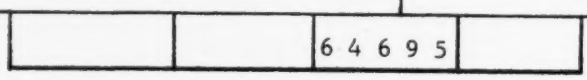


OBJECTIVE: Given a problem with two negative integers, the student will compute the sum.

SAMPLE ITEM: Add: (-5) + (-6)

Answer: -11

Level 8 Classification: Integers - Addition	41 Descriptor - Addition of Integers with Like Signs Role, Student



OBJECTIVE: Given a subtraction example with integers with unlike signs, the student will compute and write the difference.

SAMPLE ITEM: Compute and write the difference:

(+8) - (- 16)

Answer: (+ 24)

Level 8 Classification: Integers - Subtraction	41 Descriptor - Subtraction of Integers Role, Student

		6 4 7 0 0	

OBJECTIVE: Given a problem such as (+3) − (−2), the student will compute the difference.

SAMPLE ITEM: (+8) − (−7)

Answer: +15

Level 8 Classification: Integers - Subtraction	41 Descriptor - Subtraction of Integers Role, Student

		6 4 7 0 5	

OBJECTIVE: Given a problem such as (−2) − (+4) the student will compute the difference.

SAMPLE ITEM: Find the difference: (−2) − (+3)

Answer: −5

Level 8 Classification: Integers - Subtraction	41 Descriptor - Subtraction of Integers Role, Student

		6 4 7 1 0	

OBJECTIVE: Given a subtraction example with integers with like signs, the student will compute and write the difference.

SAMPLE ITEM: Compute and write the difference:

$$(-16) - (-6) =$$

Answer: −10

Level 8 Classification: Integers - Subtraction	41 Descriptor - Subtraction of Integers Role, Student

		6 4 7 1 5	

OBJECTIVE: Given a problem such as $(-5) - (-6)$, the student will compute the difference.

SAMPLE ITEM: $(-8) - (-7)$

Answer: −1

Level 8 Classification: Integers - Subtraction	41 Descriptor - Subtraction of Integers Role, Student

		6 4 7 2 0		

OBJECTIVE: Given two or more integers, the student will combine them as indicated.

SAMPLE ITEM: Combine: $-9 + 6 - (-7)$

Answer: 4

Level 8 Classification: Integers - Subtraction	41 Descriptor - Sum and Difference of Integers Role, Student

		6 4 7 2 5		

OBJECTIVE: Given a problem such as $(-2) \times (-3)$, the student will compute the product.

SAMPLE ITEM: Multiply: $(-7) \times (-5)$

Answer: 35

Level 8 Classification: Integers - Multiplication	41 Descriptor - Multiplication of Integers Role, Student

		6 4 7 3 0		

OBJECTIVE: Given a multiplication example with integers, with like signs, the student will compute and write the product.

SAMPLE ITEM: Find the product: $(-17) \times (-3)$

Answer: 51 or (+51)

Level 8 Classification: Integers - Multiplication	41 Descriptor - Multiplication of Integers Role, Student

		6 4 7 3 5		

OBJECTIVE: Given a problem such as $(-2) \times (+5)$, the student will compute the product.

SAMPLE ITEM: Multiply: $(-2) \times (+6)$

Answer: -12

Level 8 Classification: Integers - Multiplication	41 Descriptor - Multiplication of Integers Role, Student

		6 4 7 4 0	

OBJECTIVE: Given a multiplication example with integers, with unlike signs, the student will compute and write the product.

SAMPLE ITEM: Compute and write the product:

$(-45) \times (+3)$

Answer: −135

Level 8 Classification: Integers - Multiplication	41 Descriptor - Multiplication of Integers Role, Student

		6 4 7 4 5	

OBJECTIVE: Given a problem with a series of mixed positive and negative integers, the student will compute the product.

SAMPLE ITEM: Multiply: $(-3) \times (-5) \times (+10) \times (-1)$

Answer: −150

Level 8 Classification: Integers - Multiplication	41 Descriptor - Multiplication of Integers Role, Student

		6 4 7 5 0	

OBJECTIVE: Given a division example with integers, with like signs, the student will compute and write the quotient.

SAMPLE ITEM: Compute and write the quotient:

$(-24) \div (-6)$

Answer: +4

Level 8 Classification: Integers - Division	41 Descriptor - Division of Integers Role, Student

		6 4 7 5 5	

OBJECTIVE: Given a problem such as $(-4) \div (-2)$, the student will compute the quotient.

SAMPLE ITEM: Divide: $(-10) \div (-2)$

Answer: 5

Level 8 Classification: Integers - Division	41 Descriptor - Division of Integers Role, Student

		6 4 7 6 0		

OBJECTIVE: Given a division example with integers, with unlike signs, the student will compute and write the quotient.

SAMPLE ITEM: Compute and write the quotient:

$(-16) \div (+4)$

Answer: (-4)

Level 8 Classification - Integers - Division	41 Descriptor - Division of Integers Role, Student

		6 4 7 6 5		

OBJECTIVE: Given a problem such as $(-4) \div 2$, the student will compute the quotient.

SAMPLE ITEM: Divide: $(-8) \div (2)$

Answer: -4

Level 8 Classification - Integers - Division	41 Descriptor - Division of Integers Role, Student

		6 4 7 7 0	

OBJECTIVE: Given a problem such as $4 \div (-2)$, the student will compute the quotient.

SAMPLE ITEM: Divide: $20 \div (-5)$

Answer: -4

Level 8 Classification: Integers - Division	41 Descriptor - Division of Integers Role, Student

		6 4 7 7 5	

OBJECTIVE: Given two or more integers, the student will multiply or divide them as indicated.

SAMPLE ITEM: $(-4)\ (+9) \div (-6)$

Answer: $+6$

Level 8 Classification: Integers - Division	41 Descriptor - Product and Quotient - Integers Role, Student

		6 4 7 8 0	

OBJECTIVE: The student will be able to identify the set of integers from a list of sets given.

SAMPLE ITEM: Which of the following is the set of integers?

(a) $\{0,1,2,3...\}$

(b) $\{1,2,3...\}$

(c) $\{...-1, -\frac{1}{2}, 0, \frac{1}{2}, 1...\}$

(d) $\{...-2, -1, 0, 1, 2...\}$

Answer: d

Level 8 Classification: Integers - Properties	41 Descriptor - Identifying Integers Role, Student

		6 4 7 8 5	

OBJECTIVE: Given an addition (or multiplication) example with integers, the student will rewrite the example using the commutative property.

SAMPLE ITEM: Rewrite the following example using the commutative property:

$(-7) \times (-6)$

Answer: $(-6) \times (-7)$

Level 8 Classification: Integers - Properties	41 Descriptor - Commutative Property - Integers Role, Student

		6 4 7 9 0	

OBJECTIVE: Given an addition (or multiplication) example with integers, the student will rewrite the example using the associative property.

SAMPLE ITEM: Rewrite the example using associative property:

$$\left[(-4) \times (-3)\right] \times (-7)$$

Answer: $(-4) \times \left[(-3) \times (-7)\right]$

Level 8 Classification: Integers - Properties	41 Descriptor - Associative Property - Integers Role, Student

		6 4 7 9 5	

OBJECTIVE: Given an example, the student will rewrite it using the distributive property.

SAMPLE ITEM: Rewrite the following example using the distributive property:

$$6 \times \left[(-7) + (+4)\right] =$$

Answer: $\left[6 \times (-7)\right] + \left[6 \times (+4)\right]$

Level 8 Classification: Integers - Properties	41 Descriptor - Distributive Property - Integers Role, Student

		6 4 8 0 0	

OBJECTIVE: Given a list of number sentences with integers, the student will select and write the number sentence which uses the identity element for addition or multiplication.

SAMPLE ITEM: In the following list of expressions, write the letter which labels the expression that represents the use of the identity element for multiplication:

A. $(-7) \times (-1) = (+7)$
B. $(-8) \times (+1) = (-8)$
C. $(-9) \times 0 = 0$
D. $(-5) \times (+2) = (-10)$

Answer: B

Level 8 Classification: Integers - Properties	41 Descriptor - Identity - Integers Role, Student

		6 4 8 0 5	

OBJECTIVE: Given a list of number sentences involving operations with integers, the student will select and write the example which uses the inverse element for addition.

SAMPLE ITEM: Select and write the letter of the example which represents the use of the additive inverse:

A. $0 + 19 = 19$
B. $15 + (-15) = 0$
C. $17 \times 1 = 17$
D. $20 \div 2 = 10$

Answer: B

Level 8 Classification: Integers - Properties	41 Descriptor - Inverses - Integers Role, Student

Real Numbers

		6 4 8 1 0	

OBJECTIVE: Given an example involving any of the four basic operations with integers, the student will write the operation under which the integers are closed.

SAMPLE ITEM: The examples

$+3 \times (-2) = -6$

$(-7) \times (-4) = +28$

$(-3) \times (-3) = +9$

illustrate that the integers are closed with respect to ___?___.

Answer: Multiplication

Level 8 Classification: Integers - Properties	41 Descriptor - Closure - Integers Role, Student

		6 4 8 1 5	

OBJECTIVE: Given a series of rational numbers, positive and negative, the student will find the sum.

SAMPLE ITEM: Add: $\frac{2}{3}, -\frac{1}{4}, -\frac{7}{6}$ and $\frac{3}{4}$

Answer: 0

Level 8 Classification: Real Numbers - Addition	41 Descriptor - Adding Real Numbers Role, Student

		6 4 8 1 5	0 0 0 0 5

OBJECTIVE: Given a negative mixed number, the student will change it to a rational number.

SAMPLE ITEM: Change to an improper fraction: $-3\frac{1}{4}$

Answer: $-\frac{13}{4}$

Level 8 Classification: Real Numbers - Addition	41 Descriptor - Changing Neg. Mixed Nos. to Improper Fract. Role, Student

		6 4 8 2 0	

OBJECTIVE: Given an example involving subtraction of rational numbers, the student will compute and write the difference.

SAMPLE ITEM: Compute and write the difference:

$$\left(-\frac{3}{4}\right) - \left(+\frac{1}{8}\right)$$

Answer: $\left(-\frac{7}{8}\right)$

Level 8 Classification: Real Numbers - Subtraction	41 Descriptor - Subtracting Real Numbers Role, Student

		6 4 8 2 5		

OBJECTIVE: Given two rational numbers one of which is negative, the student will find the difference.

SAMPLE ITEM: Subtract: $\frac{2}{3} - \left(\frac{-1}{6} = \right)$

Answer: $\frac{5}{6}$

Level 8 Classification: Real Numbers - Subtraction	41 Descriptor - Subtracting Real Numbers Role, Student

		6 4 8 3 0		

OBJECTIVE: Given two or more directed rational numbers, the student will combine them as indicated.

SAMPLE ITEM: Combine: $\left(-\frac{3}{2} + \frac{5}{6}\right) + \frac{1}{3}$

Answer: $-\frac{2}{6}$ or $-\frac{1}{3}$

Level 8 Classification: Real Numbers - Subtraction	41 Descriptor - Sums and Differences of Real Numbers Role, Student

		6 4 8 3 5		

OBJECTIVE: Given a multiplication example with three or less rational factors, the student will compute and write the product.

SAMPLE ITEM: Find the product in lowest terms:

$$\left(-\frac{3}{4}\right) \times \left(-\frac{5}{9}\right) \times \left(\frac{4}{5}\right)$$

Answer: $\frac{1}{3}$

Level 8 Classification: Real Numbers - Multiplication	41 Descriptor - Multiplication of Real Numbers Role, Student

		6 4 8 4 0		

OBJECTIVE: Given two rational numbers, the student will compute the quotient.

SAMPLE ITEM: Divide: $\left(-\frac{1}{2}\right) \div \left(\frac{1}{3}\right)$

Answer: $-\frac{3}{2}$ or $-1\frac{1}{2}$

Level 8 Classification: Real Numbers - Division	41 Descriptor - Division of Real Numbers Role, Student

		6 4 8 4 5	

OBJECTIVE: Given two or more directed rational numbers, the student will multiply or divide them as indicated.

SAMPLE ITEM: $\left(-\frac{2}{3}\right)\left(-\frac{9}{4}\right) \div \left(-\frac{7}{3}\right)$

Answer: $-\frac{9}{14}$

Level 8 Classification: Real Numbers - Division	41 Descriptor - Mixed Operations Real Numbers Role, Student

		6 4 8 5 0	

OBJECTIVE: Given expressions involving addition, subtraction, multiplication, and division of directed rational numbers, the student will simplify these expressions and reduce the results to lowest terms.

SAMPLE ITEM: $-\frac{3}{4} + \left(\frac{2}{5}\right)\left(-\frac{5}{4}\right) + \frac{6}{11} \div \frac{1}{22}$

Answer: $10\frac{3}{4}$ or $\frac{43}{4}$

Level 8 Classification: Real Numbers - Properties	41 Descriptor - Commutative - Real Numbers Role, Student

		6 4 8 5 5	

OBJECTIVE: Given a list of examples with rational numbers, the student will select and write the example that uses the identity element for addition (or multiplication).

SAMPLE ITEM: Select and write the letter of the expression that uses the additive identity.

A. $\frac{14}{19} \times \frac{19}{14} = 1$

B. $\frac{2}{3} \times \frac{5}{8} = \frac{10}{24}$

C. $10\frac{1}{8} + \frac{1}{8} = 10\frac{2}{8}$

D. $6.75 + 0.00 = 6.75$

Answer: D

Level 8 Classification: Real Numbers - Properties	41 Descriptor - Identity - Real Numbers Role, Student

		6 4 8 6 0	

OBJECTIVE: Given a list of examples with rational numbers, the student will select and write the example that uses the inverse element for addition (or multiplication).

SAMPLE ITEM: Select and write the letter of the expression that represents the use of the additive inverse.

A. $\frac{3}{4} + 1 = \frac{3}{4}$

B. $\left(-\frac{5}{8}\right) + \left(-\frac{8}{5}\right) = \left(-\frac{89}{40}\right)$

C. $\frac{4}{5} + \left(-\frac{4}{5}\right) = 0$

D. $\left(-\frac{5}{9}\right) \times 0 = 0$

Answer: C

Level 8 Classification: Real Numbers - Properties	41 Descriptor - Inverse - Real Numbers Role, Student

		6 4 8 7 0	

OBJECTIVE: Given a set of directed rational numbers, the student will rearrange them in ascending or descending order using the greater than ($>$) or less than ($<$) symbol.

SAMPLE ITEM: Rewrite $\left\{-\frac{3}{2}, +\frac{3}{4}, 0, -\frac{2}{3}\right\}$ in descending order using the greater than symbol.

Answer: $\frac{3}{4} > 0 > -\frac{2}{3} > -\frac{3}{2}$

Level 8 Classification: Real Numbers - Order (Comparing Real Numbers)	41 Descriptor - Comparing Real Numbers Role, Student

		6 4 8 7 5	

OBJECTIVE: Given a list of real numbers, the student will select and write the rational or irrational number.

SAMPLE ITEM: Select and write the letter that labels the irrational number.

A. $\sqrt{9}$

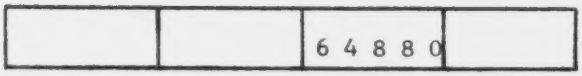
B. $\frac{3}{5}$

C. $\sqrt{2}$

D. $\sqrt{64}$

Answer: C

Level 8 Classification: Real Numbers - Square Root/Irrational Numbers	41 Descriptor - Identifying Irrationals Role, Student

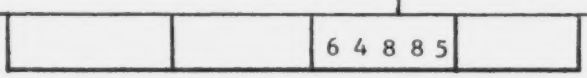


OBJECTIVE: Given a number, the student will find its square root to the nearest tenth.

SAMPLE ITEM: Find $\sqrt{359}$ to the nearest tenth.

Answer: 18.9

Level 8 Classification: Real Numbers - Square Root/Irrational Numbers	41 Descriptor - Finding Square Root Role, Student



OBJECTIVE: Given a whole number less than 100 and a table of square roots, the student will find the square root of the number.

SAMPLE ITEM: From the table given, what is the square root of 90.

Answer: 9.487

Level 8 Classification: Real Numbers - Square Root/Irrational Numbers	41 Descriptor - Finding Square Root Role, Student

		6 4 8 9 0	

OBJECTIVE: Given a whole number greater than 100 but not a perfect square, and a table of square roots, the student will find the square root to the nearest whole number.

SAMPLE ITEM: Using table of square roots, find $\sqrt{120}$ to the nearest whole number.

Answer: 11

Level 8 Classification: Real Numbers - Square Root/Irrational Numbers	41 Descriptor - Finding Square Root Role, Student

		6 4 8 9 5	

OBJECTIVE: Given a whole number greater than 100 that is a perfect square and the table of square roots, the student will find the square root of the given whole number.

SAMPLE ITEM: Use the table of square roots to find the value of $\sqrt{196}$.

Answer: 14

Level 8 Classification: Real Numbers - Square Root/Irrational Numbers	41 Descriptor - Finding Square Root Role, Student

Ratio, Proportion, and Percent

58624

		6 4 9 0 0	

OBJECTIVE: Given a decimal the student will convert the decimal notation to a percent.

SAMPLE ITEM: Write as a percent: 1.00

Answer: 100%

Level 8 Classification: Ratio, Proportion, and Percent - Percent	41 Descriptor - Converting Percent/Decimal/Ratio/ Fraction Role, Student

		6 4 9 0 5	

OBJECTIVE: Given a percent such as 106% the student will convert the percent to decimal notation.

SAMPLE ITEM: Write 100% as a decimal.

Answer: 1.0 or 1.00

Level 8 Classification: Ratio, Proportion, and Percent - Percent	41 Descriptor - Converting Percent/Decimal/Ratio/ Fraction Role, Student

		6 4 9 1 0	

OBJECTIVE: Given a percentage with a decimal such as 1.5% the student will convert the percent to decimal notation.

SAMPLE ITEM: Write 1.6% as a decimal.

Answer: .016

Level 8 Classification: Ratio, Proportion, and Percent - Percent	41 Descriptor - Converting Percent/Decimal/Ratio/ Fraction Role, Student

		6 4 9 1 5	

OBJECTIVE: Given a percent, less than 100%, such as 59% or 12% the student will convert the percent to decimal notation.

SAMPLE ITEM: Write as a decimal: 25%

Answer: .25

Level 8 Classification: Ratio, Proportion, and Percent - Percent	41 Descriptor - Converting Percent/Decimal/Ratio/ Fraction Role, Student

		6 4 9 2 0	

OBJECTIVE: Given a problem involving a percent, the student will find the missing percentage, base, or rate.

SAMPLE ITEM: 54 is 60% of what number?

Answer: 90

Level 8 Classification: Ratio, Proportion, and Percent - Percent	41 Descriptor - Computing Percents Role, Student

		6 4 9 2 5	

OBJECTIVE: Given a ratio, the student will rewrite it in simplest form.

SAMPLE ITEM: Write the following ratio in simplest form.

36:54

Answer: 2:3

Level 8 Classification: Ratio, Proportion, and Percent - Ratio	41 Descriptor - Converting Percent/Decimal/Ratio/ Fraction Role, Student

		6 4 9 3 0		

OBJECTIVE: Given a ratio expressed in the form 3:8, the student will identify that ratio expressed in the form $\frac{3}{8}$.

SAMPLE ITEM: Write: 3:8 as a common fraction.

Answer: $\frac{3}{8}$

Level 8 Classification: Ratio, Proportion, and Percent - Ratio	41 Descriptor - Converting Percent/Decimal/Ratio/ Fraction Role, Student

		6 4 9 3 5		

OBJECTIVE: Given a ratio expressed in the form $\frac{3}{8}$, the student will identify the ratio expressed in the form 3:8.

SAMPLE ITEM: Write $\frac{2}{9}$ as a ratio.

Answer: 2:9

Level 8 Classification: Ratio, Proportion, and Percent - Ratio	41 Descriptor - Converting Percent/Decimal/Ratio/ Fraction Role, Student

		6 4 9 4 0	

OBJECTIVE: Given set A and set B, the student will express the relationship between the number of elements in set A and the number of elements of set B in terms of a ratio.

SAMPLE ITEM: Given: Set A = $\{1,3,4,6\}$

Set B = $\{2,9,17,31,36\}$

Write the ratio for the number of elements of Set A to Set B.

Answer: $\frac{4}{5}$ or 4:5

Level 8 Classification: Ratio, Proportion, and Percent - Ratio	41 Descriptor - Finding Ratio Role, Student

		6 4 9 4 5	

OBJECTIVE: Given any percent, ratio, or decimal, the student will rename the number as a percent, ratio, or decimal, as indicated.

SAMPLE ITEM: Rewrite the ratio 3:8 as a percent.

Answer: 37.5% or $37\frac{1}{2}\%$

Level 8 Classification: Ratio, Proportion, and Percent - Changing Ratio to Percent and Vice Versa	41 Descriptor - Converting Percent/Decimal/Ratio/ Fraction Role, Student

		6 4 9 5 0	

OBJECTIVE: Given an equation such as 30% of x is 25, the student will set up the corresponding proportion.

SAMPLE ITEM: Set up the corresponding proportion:

30% of x is 25.

Answer: $\frac{30}{100} = \frac{25}{X}$

Level 8 Classification: Ratio, Proportion, and Percent - Proportion	41 Descriptor - Setting up Proportions Role, Student

		6 4 9 5 0	0 0 0 5

OBJECTIVE: From four mathematical sentences, the student will select a true proportion.

SAMPLE ITEM: Which of the following is a true proportion?

a) $\frac{3}{11} = \frac{6}{22}$

b) $\frac{6}{11} = \frac{3}{22}$

c) $\frac{3}{22} = \frac{6}{11}$

d) $\frac{3}{6} = \frac{22}{11}$

Answer: a

Level 8 Classification: Ratio, Proportion, and Percent - Proportion	41 Descriptor - Identifying True Proportions Role, Student

		6 4 9 5 5	

OBJECTIVE: Given an expression such as 35% of 62 = x, the student will set up the corresponding proportion.

SAMPLE ITEM: Set up the corresponding proportion:

35% of 62 = x

Answer: $\frac{35}{100} = \frac{x}{62}$

Level 8 Classification: Ratio, Proportion, and Percent - Proportion	41 Descriptor - Setting Up Proportion Role, Student

		6 4 9 6 0	

OBJECTIVE: Given an expression such as ___% of 25 is 5, the student will set up the corresponding proportion.

SAMPLE ITEM: Set up the corresponding proportion:

X% of 25 is 5

Answer: $\frac{X}{100} = \frac{5}{25}$

Level 8 Classification: Ratio, Proportion, and Percent - Proportion	41 Descriptor - Setting Up Proportion Role, Student

		6 4 9 6 5	

OBJECTIVE: Given a proportion with one unknown expressed in fractional form such as 5/1 is N/4, the student will solve for the unknown.

SAMPLE ITEM: Solve for X:

$$\frac{X}{4} = \frac{3}{6}$$

Answer: X = 2

Level 8 Classification: Ratio, Proportion, and Percent - Proportion	41 Descriptor - Solving Proportions Role, Student

		6 4 9 7 0	

OBJECTIVE: Given a proportion in which one term is missing, the student will find the missing term.

SAMPLE ITEM: Find the missing term in the proportion:

$$2:x = 5:25$$

Answer: x = 10

Level 8 Classification: Ratio, Proportion, and Percent - Proportion	41 Descriptor - Solving Proportions Role, Student

Measurement

		6 4 9 7 5		

OBJECTIVE: Given a line segment, the student will give the measure of the line using a metric ruler, or English ruler, as indicated.

SAMPLE ITEM: Write the measure in centimeters of $\overline{AB}$.

Answer: 3 cm.

Level 8
Classification: Measurement - Linear-English/Metric

41 Descriptor - Operations with Linear Measure

Role, Student

		6 4 9 8 0		

OBJECTIVE: Given a table of equivalent linear units (metric and English) and a measure, the student will convert the given measure from one system to the other.

SAMPLE ITEM: How many inches altogether are there in 17.78 centimeters?

(1 inch = 2.54 cm.)

Answer: 7 inches

Level 8
Classification: Measurement - Linear - English/Metric

41 Descriptor - Converting Linear Measure

Role, Student

		6 4 9 8 5	

OBJECTIVE: Given an indicated sum or difference of English linear measures, the student will find the result in simplest form.

SAMPLE ITEM: Add:
$$\begin{array}{r} 5 \text{ yds. } 2 \text{ ft. } 7 \text{ in.} \\ +\ 3 \text{ yds. } 6 \text{ ft. } 9 \text{ in.} \end{array}$$

Answer: 11 yds. 4 in. or $11\frac{1}{9}$ yds.

Level 8 Classification: Measurement - Linear-English/Metric	41 Descriptor - Operations with Linear Measure Role, Student

		6 4 9 8 5	0 0 0 5

OBJECTIVE: Given any English linear measure, the student will find its equivalent in another specified English unit.

SAMPLE ITEM: How many inches in all are there in 11 feet?

Answer: 132 inches

Level 8 Classification: Measurement - Linear-English/Metric	41 Descriptor - Converting Linear Measure Role, Student

		6 4 9 9 5	

OBJECTIVE: Given a indicated sum or difference of metric linear measures, the student will find the result in the indicated unit.

SAMPLE ITEM: Add 5.32 m. and 16 cm. and express the sum in meters.

Answer: 5.48 meters

Level 8 Classification: Measurement - Linear-English/Metric	41 Descriptor - Operations with Linear Measure Role, Student

		6 4 9 9 5	0 0 0 5

OBJECTIVE: Given any metric linear measure, the student will find its equivalent in another specified metric unit.

SAMPLE ITEM: How many centimeters are there in 349 millimeters?

Answer: 34.9 centimeters

Level 8 Classification: Measurement - Linear-English/Metric	41 Descriptor - Converting Linear Measure Role, Student

		6 5 0 0 0	

OBJECTIVE: Given an indicated product or quotient involving linear measures in the English system, the student will find the result in the simplest form.

SAMPLE ITEM: Divide 10 yds. 2 ft. 8 in. by 2.

Answer: 5 yds. 1 ft. 4 in.

Level 8 Classification: Measurement - Linear-English/Metric	41 Descriptor - Operations With Linear Measure Role, Student

		6 5 0 0 5	

OBJECTIVE: Given an indicated product or quotient of linear metric measures, the student will find the result in the indicated unit.

SAMPLE ITEM: Express the product 4 x 57 cm. in meters.

Answer: 2.28 m.

Level 8 Classification: Measurement - Linear-English/Metric	41 Descriptor - Operations With Linear Measure Role, Student

		6 5 0 1 0	

OBJECTIVE: Given a set of measurements, the student will select and write the most accurate measure.

SAMPLE ITEM: Select and write the most accurate measure below.

86.3 days	86.213 days
86.91 days	86.21 days

Answer: 86.213 days

Level 8 Classification: Measurement - Precision	41 Descriptor - Precision of Measurements Role, Student

Geometry

639 73

		65030	

OBJECTIVE: Given a geometric name and a group of solid shapes, the student will select the correct shape for the name given .

SAMPLE ITEM: The figure below represents a a) cylinder, b) cone, c) pyramid, d) sphere.

Answer: b (cone)

Level 8 Classification - Geometry, Identifying Figures	41 Descriptor - Identifying Solids Role, Student

		65035	

OBJECTIVE: Given pictures of a prism, cylinder, cone, and pyramid and three of the four labeled, the student will write the name of the figure not labeled.

SAMPLE ITEM: Write the name of the figure not already named.

Answer: Cylinder

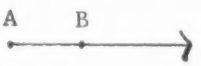
Level 8 Classification - Geometry, Identifying Figures	41 Descriptor - Identifying Solids Role, Student

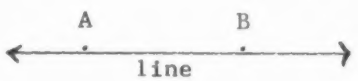
		65045	

OBJECTIVE: Given four pictures of a line, angle, ray, or line segment, and three of the four labeled, the student will write the name of the figure not labeled.

SAMPLE ITEM: Write the name of the geometric figure which is not labeled.

A._____B.
segment





Answer: Ray

Level 8 Classification - Geometry, Lines	41 Descriptor - Lines, Line Segments, Rays Role, Student

		65050	

OBJECTIVE: Given a pictureof an angle, the student will identify it as a right, acute, abtuse, or straight angle.

SAMPLE ITEM:

Represented above are an acute, obtuse, right and ___?___ angle.

Answer: Straight

Level 8 Classification - Geometry, Angles	41 Descriptor - Angles Classification Role, Student

		65055	

OBJECTIVE: Given the measure of an angle, the student will classify the angle as acute, right, obtuse, or straight.

SAMPLE ITEM: Classify an angle of 52° according to measure.

Answer: Acute

Level 8 Classification - Geometry, Angles	41 Descriptor - Angles Classification Role, Student

		65060	

OBJECTIVE: Given an angle measure, the student will compute and write the measure of the complement or supplement of that angle.

SAMPLE ITEM: Write the measure of the complement of an angle of 17°

Answer: 73°

Level 8 Classification - Geometry, Angles	41 Descriptor - Angles Classification Role, Student

		65065	

OBJECTIVE: Given an angle, the student will find its complement or supplement.

SAMPLE ITEM: (a) What is the complement of an angle whose measure is 30^{o}?

(b) What is the supplement of an angle whose measure is 30^{o}?

Answer: (a) 60^{o}

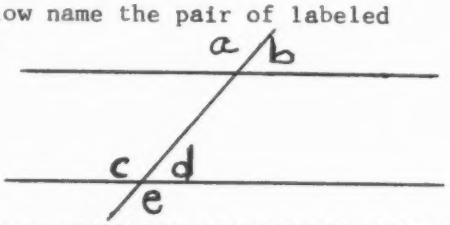
(b) 150^{o}

Level 8 Classification - Geometry, Angles	41 Descriptor - Angles, Classification Role, Student

		65070	

OBJECTIVE: Given two parallel lines cut by a transversal, the student will name either a pair of corresponding angles, a pair of alternate interior angles, a pair of alternate exterior angles, or a pair of vertical angles.

SAMPLE ITEM: In the figure below name the pair of labeled vertical angles.



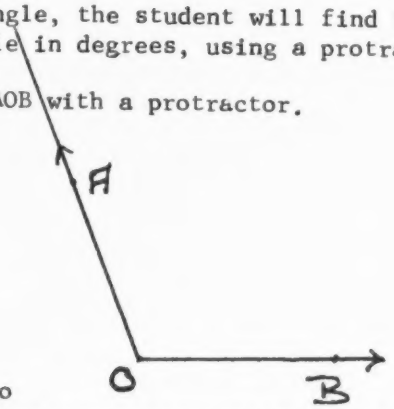
Answer C, E

Level 8 Classification - Geometry, Angles	41 Descriptor- Angles, Classification Role, Student

		65075	

OBJECTIVE: Given an angle, the student will find the measure of the angle in degrees, using a protractor.

SAMPLE ITEM: Measure AOB with a protractor.



Answer: 110°

Level 8 Classification - Geometry, Angles	41 Descriptor - Measuring Angles Using Protractor Role, Student

		65080	

OBJECTIVE: The student will identify in writing that a polygon with congruent sides and congruent angles is regular.

SAMPLE ITEM: A hexagon with all of its sides congruent and angles congruent is known as a _____?_____polygon.

Answer: Regular

Level 8 Classification - Geometry, Polygon/ Polyhedra	41 Descriptor - Regular Polygons Role, Student

		65085	

OBJECTIVE: Given the number of sides of a polygon, eight sides or less, the student will find and write the number of diagonals.

SAMPLE ITEM: In a 5-sided polygon, how many diagonals can be drawn in all?

Answer: 5

Level 8 Classification-Geometry, Polygons/Polyhedra	41 Descriptor - Polygons Number of diagonals

		65090	

OBJECTIVE: Given a definition of a circle with a key word missing, the student will write the missing word.

SAMPLE ITEM: "The set of points in a ___?___ at a given distance from a given point in the plane" is called a circle.

Answer: Plane

Level 8 Classification - Geometry, Circles	41 Descriptor - Definition of Circle Role, Student

		65095	

OBJECTIVE: Given the radius or diameter of a circle, the student will find the circumference.

SAMPLE ITEM: Find the circumference of a circle with a diameter of 7 cm.

Answer: 22 cm. or 21.98 cm.

Level 8 Classification - Geometry, Circles	41 Descriptors - Circumference of a Circle Role, Student

		65100	

OBJECTIVE: Given the radius of a circle, the student will compute and write the circumference or area (using π = 3.14 or π = 3 1/7).

SAMPLE ITEM: If the radius of a circle is 3.7 inches, find the circumference using π = 3.14.

Answer: 23.236"

Level 8 Classification - Geometry, Circles	41 Descriptor - Circumference of a Circle

		65105	

OBJECTIVE: Given the radius or diameter of a circle, the student will find the area using $\pi = \frac{22}{7}$ or $\pi = 3.14$.

SAMPLE ITEM: Find the area of a circle with a diameter of 14 m.

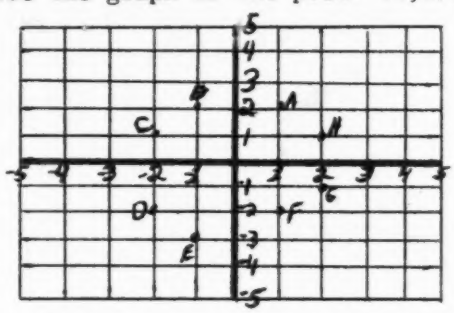
Answer: 154 sq.m. or 153.86 sq. m.

Level 8 Classification - Geometry, Circles	41 Descriptor - Area of a Circle Role, Student

		65110	

OBJECTIVE: Given the coordinates of a point in the form (4, -1), the student will be able to select the proper point from a series of given points.

SAMPLE ITEM: From the following, choose the graph of the point (2,1):



Level 8 Classification - Geometry, Coordinate Geometry	41 Descriptor - Plotting Points on Coordinate Axis Role, Student

		65115	

OBJECTIVE: Given the ordered pair (5,6) the student will identify the abscissa (X value) or the ordinate (Y value).

SAMPLE ITEM: Given the ordered pair (0,5), identify the y value.

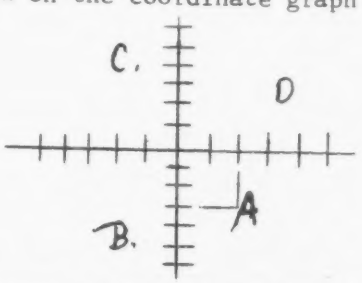
Answer: y = 5

Level 8 Classification - Geometry, Coordinate Geometry	41 Descriptor - Plotting Points on Coordinate Axis Role, Student

		65120	

OBJECTIVE: Given a labeled point on a graph, the student will find and write the coordinates of the point.

SAMPLE ITEM: Name the coordinates for point A on the coordinate graph below.



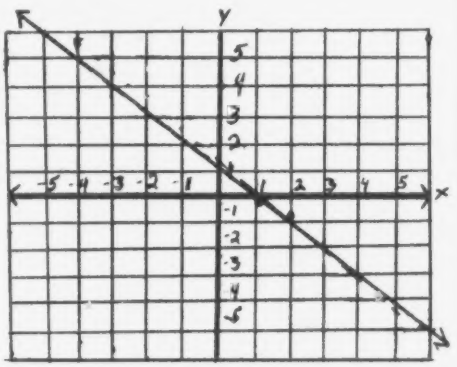
Answer: (2, -3)

Level 8 Classification - Geometry, Coordinate Geometry	41 Descriptor - Plotting Points on Coordinate Axis Role, Student

		65125	

OBJECTIVE: In an equation such as 3 - x = y, where x is given, the student will select a point corresponding to the equation from a series of points on a graph.

SAMPLE ITEM: Draw on a coordinate graph: 1 - x = y



Answer:

Level 8
Classification: Geometry, Coordinate Geometry

41 Descriptor - Graphing Linear Equations

Role, Student

		65130	

OBJECTIVE: Given the corrdinates of four points and a linear equation, the student will select and write the coordinates of the point which satisfies the equation.

SAMPLE ITEM: Select and write the coordinates of the point that satisfies the following equation:

$$y = 2x + 1$$

Points: (1,3)
(-3,2)
(-1,-4)
(2,2)

Answer: (1,3)

Level 8
Classification; Geometry, Coordinate Geometry

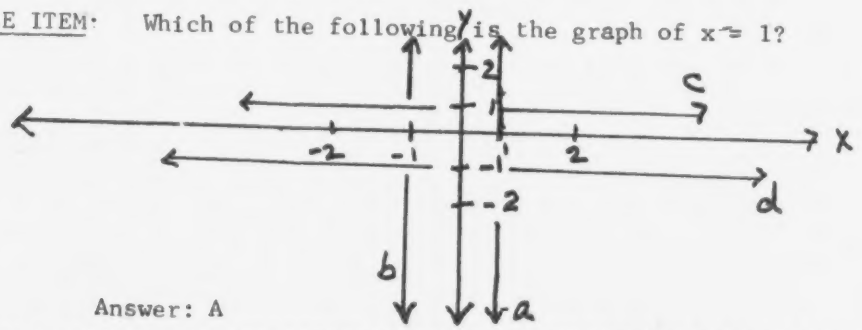
41 Descriptor - Graphing Linear Equations

Role, Student

		65135	

OBJECTIVE: Given an equation in the form of x = -3, the student will select the line corresponding to the equation from a series of lines drawn on the graph.

SAMPLE ITEM: Which of the following is the graph of x = 1?



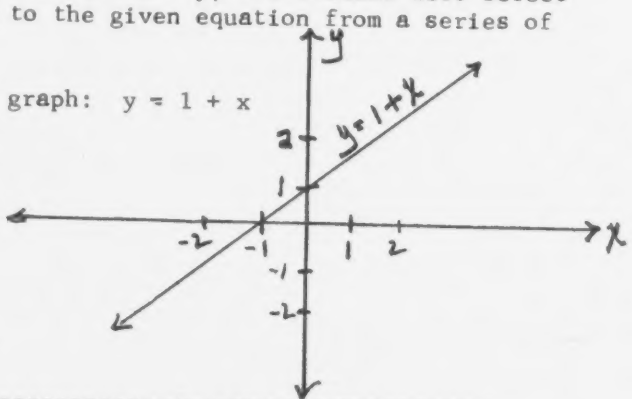
Answer: A

Level 8 Classification - Geometry, Coordinate Geometry	41 Descriptor - Graphing Linear Equations Role, Student

		65140	

OBJECTIVE: Given an equation such as 3 + x = y, the student will select a line corresponding to the given equation from a series of lines on a graph.

SAMPLE ITEM: Draw on a coordinate graph: y = 1 + x

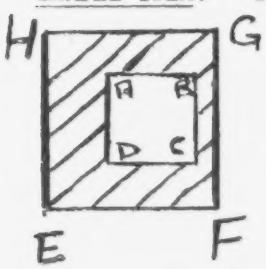


Level 8 Classification - Geometry, Coordinate Geometry	41 Descriptor - Graphing Linear Equations Role, Student

		65160	

OBJECTIVE: Given two plane geometric figures, one inside the other, and their dimensions, the student will compute and write the area of the shaded region.

SAMPLE ITEM: Compute and write the area of the shaded region.



Given: square A B C D
A B = 2 inches
square E F G H
E F = 4 inches

Answer 12 sq. in.

Level 8 Classification - Geometry, Area/Perimeter Volume	41 Descriptor - Area of Polygon Role, Student

		65165	

OBJECTIVE: Given the dimensions of a plane geometric figure in metric units, the student will compute and write the area.

SAMPLE ITEM: Compute and write the area of a triangle whose base is 42 mm and whose altitude is 65 mm.

Answer; 1,365 sq. mm.

Level 8 Classification - Geometry, Area/Perimeter/ Volume	41 Descriptor - Area of Polygon Role, Student

		65170	

OBJECTIVE: Given the dimensions of a trapezoid, the student will compute and write the area.

SAMPLE ITEM: Compute and write the area of a trapezoid whose bases are 7 and 4 inches. The height is 4 inches.

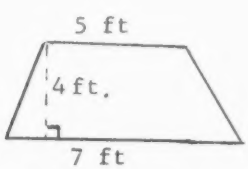
Answer: 22 square inches

Level 8 Classification - Geometry - Area/ Perimeter/Volume	41 Descriptor - Area of Polygon Role, Student

		65175	

OBJECTIVE: Given the height and dimensions of the sides of a parallelogram or a trapezoid, the student will find the area.

SAMPLE ITEM: Find the area of the following trapezoid:



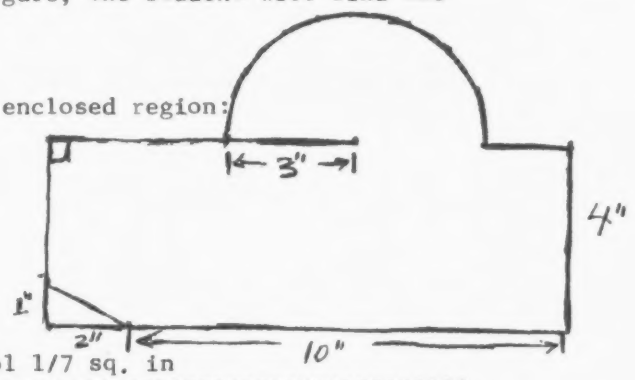
Answer: 24 sq. ft.

Level 8 Classification - Geometry- Area/ Perimeter/Volume	41 Descriptor - Area of Polygon Role, Student

		65180	

OBJECTIVE: Given the diagram of a closed figure, and the necessary dimensions of that figure, the student will find the area.

SAMPLE ITEM: Find the area of the enclosed region:



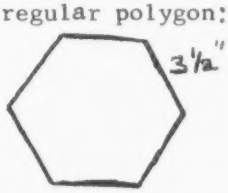
Answer: 61.13 sq. in or 61 1/7 sq. in

Level 8 Classification - Geometry - Area/ Perimeter/Volume	41 Descriptor - Area of Polygon Role, Student

		65185	

OBJECTIVE: Given a regular polygon and the length of one of its sides, the student will compute and write the perimeter.

SAMPLE ITEM: Compute and write the perimeter of the following regular polygon:



Answer: 21 inches

Level 8 Classification - Geometry - Area/ Perimeter/Volume	41 Descriptor - Perimeter Role, Student

		65190	

OBJECTIVE: Given the length and width of a rectangle, the student will compute and write the area or perimeter.

SAMPLE ITEM: Compute and write the area of a rectangle whose sides are 12 ½" and 8".

Answer: 100 sq. inches

Level 8 Classification - Area/ Perimeter Geometry - Volume	41 Descriptor - Area or Perimeter Role, Student

		65195	

OBJECTIVE: Given the dimensions of a polygon expressed in metric units, the student will find the perimeter.

SAMPLE ITEM: Find the perimeter of a regular octagon with a side of 7.2 cm.

Answer: 57.6

Level 8 Classification - Geometry - Area/ Perimeter/Volume	41 Descriptor - Perimeter

		65200	

OBJECTIVE: Given the dimensions of a polygon expressed in English units, the student will find the perimeter of the polygon.

SAMPLE ITEM: Find the perimeter of a triangle with sides of 2 ft. 3 in., 5 ft. 6 in., and 4 ft. 8 in.

Answer: 12 ft. 5 in. or 4 yds. 5 in.

Level 8 Classification - Geometry - Area/Perimeter/Volume	41 Descriptor - Perimeter Role, Student

		65205	

OBJECTIVE: Given the height and radius of the base of a cone, the student will compute the volume in cubic units.

SAMPLE ITEM: Find the volume of a cone whose radius is 7 in. and whose height is 9 in. Use $\pi = \frac{22}{7}$

Answer: 462 cubic inches

Level 8 Classification - Geometry Area/Perimeter/Volume	41 Descriptor - Volume Role, Student

		65210	

OBJECTIVE: Given a sphere and the radius, the student will compute the volume.

SAMPLE ITEM: Find the volume of a sphere whose radius is 9 cm. (leave answer in terms of π)

Answer: 972 π cubic cm.

Level 8 Classification - Geometry Area/Perimeter/Volume	41 Descriptor - Volume Role, Student

		65215	

OBJECTIVE: Given the base and height of a pyramid, the student will compute the volume.

SAMPLE ITEM: Find the volume of a square pyramid, the length of the base is 8 and the height is 9.

Answer: 192

Level 8 Classification - Geometry Area/Perimeter/Volume	41 Descriptor - Volume Role, Student

		65220	

OBJECTIVE: Given the formula for the volume of a cylinder and the dimensions, the student will compute and write the volume. (π = 3.14 or π = 3 1/7)

SAMPLE ITEM: Using the formula ($V = \pi r^2 h$) and 3 1/7 as an approximation of π, find the volume of a right cylinder with a radius of the base of 5 ft. and a height of 14 ft.

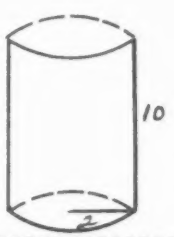
Answer: 1100 cu. ft.

Level 8 Classification - Geometry - Area/Perimeter/Volume	41 Descriptor - Volume Role, Student

		65225	

OBJECTIVE: Given a right circular cylinder, its radius and height, the student will compute the volume in cubic units.

SAMPLE ITEM: Find the volume of the cylinder on the left. Leave your answer in terms of π.



Answer: 40π

Level 8 Classification - Geometry Area/Perimeter/Volume	41 Descriptor - Volume Role, Student

		65230	

OBJECTIVE: Given the dimensions of a rectangular solid the student will find the volume.

SAMPLE ITEM: Find the volume of a rectangular solid with length 5 cm., width 3 cm., height 4 cm.

Answer: 60 cu. cm

Level 8 Classification - Geometry - Area Perimeter/Volume	41 Descriptor - Volume Role, Student

		65235	

OBJECTIVE: Given the formula for the volume of a prism and its dimensions, the student will compute and write the volume.

SAMPLE ITEM: Compute and write the volume of a prism having a length of 15 ft., a width of 7.7 ft., and height of 6.5 ft. (Using the formula V = lwh)

Answer: 750.75 cu ft.

Level 8 Classification - Geometry - Area/Perimeter/Volume	41 Descriptor - Volume Role, Student

		65240	

OBJECTIVE: Given a rectangular prism, and dimensions, the student will compute the volume.

SAMPLE ITEM: Find the volume of a rectangular prism whose length is 6 inches, whose width is 5 inches and whose height is 4 inches.

Answer: 120 cu. in.

Level 8 Classification - Geometry - Area/Perimeter/Volume	41 Descriptor - Volume Role, Student

		65245	

OBJECTIVE: Given the dimensions of a rectangular prism in metric units, the student will compute and write the volume.

SAMPLE ITEMS: Find the volume of a rectangular prism having a length of 9 cm., a width of 8 cm., and a height of 5 cm.

Answer: 360 cu cm

Level 8 Classification - Geometry - Area/Perimeter/Volume	41 Descriptor - Volume Role, Student

		65250	

OBJECTIVE: Given the formula for the volume of a cone and its dimensions, the student will compute and write the volume.
(π = 3.14 or π = 3 1/7)

SAMPLE ITEM: Find the volume of a cone whose radius is 3 inches and height is 8 inches, using the formula $V = 1/3\ \pi\ r^2h$.
(π = 3.14)

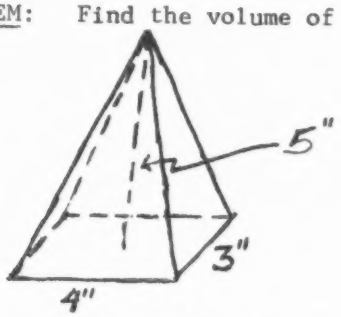
Answer: 75.36 cu. in

Level 8 Classification - Geometry - Area/Perimeter/Volume	41 Descriptor - Volume Role, Student

		65255	

OBJECTIVE: Given the dimensions of a pyramid, the student will find its volume.

SAMPLE ITEM: Find the volume of the pyramid:



Answer: 20 cu. cm

Level 8 Classification - Geometry - Area/Perimeter/Volume	41 Descriptor - Volume Role, Student

		65260	

OBJECTIVE: Given the formula for the volume of a pyramid and its dimensions, the student will compute and write the volume.

SAMPLE ITEM: Using the formula, V = 1/3 BH, compute and write the volume of a pyramid when the area of the base is 420 sq. feet and the height of the pyramid is 100 feet.

Answer: 14,000 cu. ft.

Level 8 Classification - Geometry - Area/Perimeter/Volume	41 Descriptor - Volume Role, Student

		65265	

OBJECTIVE: Given the dimensions of a cone, the student will find the volume.

SAMPLE ITEM: Find the volume of the cone:

Answer: 150 6/7 cu. in. or 150.72 cu. in.

Level 8 Classification: Geometry - Area/Perimeter/Volume	41 Descriptor - Volume Role, Student

		65270	

OBJECTIVE: Given the formula for the volume of a sphere and its radius, the student will compute and write the volume (π = 3.14 or π = 3 1/7).

SAMPLE ITEM: Using the formula $V = 4/3\ \pi\ R^3$, find and write the volume of a sphere having a radius of 3 inches (π = 3.14).

Answer: 113.04 cu. inches

Level 8 Classification - Geometry Area/Perimeter/Volume	41 Descriptor - Volume Role, Student

		65275	

OBJECTIVE: Given the radius or diameter of a sphere, the student will find the volume.

SAMPLE ITEM: Find the volume of a sphere with radius 3 ft.

Answer: 113.04 cu. ft. or 113 1/7 cu. ft.

Level 8 Classification - Geometry Area/Perimeter/Volume	41 Descriptor - Volume Role, Student

		65280	

OBJECTIVE: Given a sphere and the radius, the student will compute the surface area.

SAMPLE ITEM: Find the surface area of a sphere with radius 9 cm. (Leave answer in terms of π)

Answer: 324 π sq. cm.

Level 8 Classification - Geometry Area/Perimeter/Volume	41 Descriptor - Surface Area Role, Student

		65285	

OBJECTIVE: Given the dimensions of a rectangular solid, the student will find the total surface area.

SAMPLE ITEM: Given a rectangular solid with length 7 ft., width 5 ft., and height 4 ft., find the total surface area.

Answer: 166 sq. ft.

Level 8 Classification - Geometry - Area/Perimeter/Volume	41 Descriptor - Surface Area Role, Student

		65290	

OBJECTIVE: Given the radius of the bottom and the lateral height of a cone, the student will compute the total area in square units.

SAMPLE ITEM: If the radius of the base of a cone is 7" and its slant height is 8", find the total area. ($\pi = \frac{22}{7}$)

Answer: 330 sq. in.

Level 8 Classification - Geometry Area/Perimeter/Volume	41 Descriptor - Surface Area Role, Student

		65295	

OBJECTIVE: Given the length of the base and the slant height, the student will compute the total surface area of a pyramid.

SAMPLE ITEM: Find the total surface area of a regular square pyramid whose base is 8 inches on a side and whose slant height is 10 inches.

Answer: 224 sq in

Level 8 Classification - Geometry - Area/Perimeter/Volume	41 Descriptor - Surface Area Role, Student

		65300	

OBJECTIVE: Given a right circular cylinder and its radius and height, the student will compute the total surface area.

SAMPLE ITEM: Find the total surface area of a right circular cylinder whose height is 12 inches and whose radius is 3 ½ inches. (let $\pi = 22/7$)

Answer: 341 sq. in.

Level 8 Classification - Geometry - Area/Perimeter/Volume	41 Descriptor - Surface Area Role, Student

		65305	

OBJECTIVE: Given the dimensions of a parallelogram, the student will compute and write the area or perimeter.

SAMPLE ITEM: Find the perimeter of a parallelogram having sides of 15.2 ft. and 12 ft.

Answer: 54.4 ft.

Level 8 Classification - Geometry - Area/Perimeter/Volume	41 Descriptor - Area or Perimeter Role, Student

		65310	

OBJECTIVE: Given the dimensions of a square, the student will compute and write the area or perimeter

SAMPLE ITEM: Find and write the area of a square having a side of 31.6 inches.

Answer: 998.56 sq. inches

Level 8 Classification - Geometry Area/Perimeter/Volume	41 Descriptor - Area or Perimeter Role, Student

		65315	

OBJECTIVE: Given the dimensions of any triangle, quadrilateral, or circle, the student will find the area and the perimeter, or circumference.

SAMPLE ITEM: Find the area and the perimeter of a square having a side 8 inches long.

Answer: Area = 64 sq. in.
Perimeter = 32 inches

Level 8 Classification - Geometry - Area/Perimeter/Volume	41 Descriptor - Area or Perimeter

		65320	

OBJECTIVE: Given a triangle or its verbal description, the student will classify it according to the relationships of its sides or angles.

SAMPLE ITEM: Classify the triangle in the accompanying figure according to its angles:

Answer: acute triangle

Level 8 Classification - Geometry Triangles/Congruence/Similarity	41 Descriptor - Classification of Triangles Role, Student

		65325	

OBJECTIVE: Given a description of a triangle, the student will write the name of the triangle as acute, right, or obtuse.

SAMPLE ITEM: A triangle that has each of its three angles less than 90^{o} is called a (n) _____triangle.

Answer: Acute

Level 8 Classification - Geometry - Triangles/Congruence/ Similarity	41 Descriptor - Classification of Triangles Role, Student

		65330	

OBJECTIVE: Given a description of a triangle, the student will write the name of the triangle as scalene, isoceles, or equilateral.

SAMPLE ITEM: A triangle with 2 sides congruent is known as a(n) _____ triangle?

Answer: Isosceles

Level 8 Classification - Geometry - Triangles/Congruence/Similarity	41 Descriptor - Classification of Triangles Role, Student

402

		65335	

OBJECTIVE: Given any triangle with the lengths of two sides known, the student will give the bounds on the length of the third side using symbols of inequality.

SAMPLE ITEM: If two sides of a triangle measure 2" and 5", what are the bounds on the third side?

Answer: $3" < x < 7"$

Level 8 Classification - Geometry - Triangles/Congruence/Similarity	41 Descriptor - Triangle Inequality Role, Student

		65340	

OBJECTIVE: Given the measures in degrees of two angles of a triangle, the student will find the measure in degrees of the third angle.

SAMPLE ITEM: In triangle ABC, $m\angle A = 82^{\circ}$, and $m\angle B = 74^{\circ}$. Find the measure of angle C.

Answer: 24°

Level 8 Classification - Geometry - Triangles/Congruence/Similarity	41 Descriptor - Sum of the Angles of a Triangle Role, Student

		65345	

OBJECTIVE: Given a 30-60 triangle and the length of the hypotenuse, the student will compute the length of each leg of the triangle.

SAMPLE ITEM: A triangle is a 30-60 right triangle. How long is each leg of the triangle if the hypotenuse is 20 ft?

Answer: 10 ft. and 17.32 ft.

Level 8
Classification - Geometry - Triangles/Congruence/Similarity

41 Descriptor - Special Triangles

Role, Student

		6 5 3 5 0	

OBJECTIVE: Given a 45^{o} right triangle and the length of the hypotenuse, the student will compute the length of both legs of the triangle.

SAMPLE ITEM: In the 45^{o} isosceles right triangle, what is the length of each of the legs when the hypotenuse is 8 ft.?

Answer: 5.66 Feet

Level 8
Classification - Geometry - Triangles/Congruence/Similarity

41 Descriptor - Special Triangles

Role, Student

		6 5 3 5 5		

OBJECTIVE: Given the base and height of a triangle, the student will find the area of the triangle.

SAMPLE ITEM: Find the area of a triangle with a base of 5 ft. and the height to that base of 4 ft.

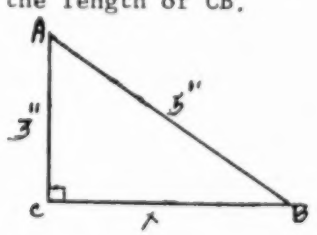
Answer: 10 sq. ft.

Level 8 Classification - Geometry - Triangles/Congruence/Similarity	41 Descriptor - Area of a Triangle Role, Student

		6 5 3 6 0		

OBJECTIVE: Given a right triangle and the lengths of two sides, the student will find the length of the third side using the Pythagorean theorem.

SAMPLE ITEM: Given right triangle ABC with right angle at C. Find the length of $\overline{CB}$.



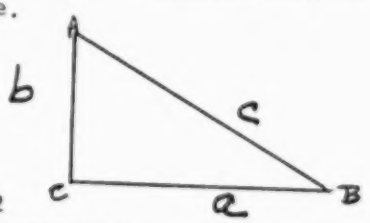
Answer: 4"

Level 8 Classification - Geometry - Triangles/Congruence/Similarity	41 Descriptor - Pythagorean theorem Role, Student

		6 5 3 6 0	0 0 0 0 5

OBJECTIVE: Given a right triangle with the sides labeled in letters the student will set up the pythagorean theorem using the letters given.

SAMPLE ITEM: Given the right triangle below with hypotenuse C write the equation showing the relationship of the sides to the hypotenuse.



Answer: $a^2 + b^2 = c^2$

Level 8 Classification - Geometry - Triangles/Congruence/Similarity	41 Descriptor - Pythagorean Theorem Role, Student

		6 5 3 6 5	

OBJECTIVE: Given a verbal problem involving use of the Pythagorean theorem, the student will find the solution.

SAMPLE ITEM: A ladder 10 feet long is placed against a building. The top of the ladder just reaches the bottom of a window sill. The base of the ladder is placed 6 feet from the building Find the distance from the ground to the bottom of the window.

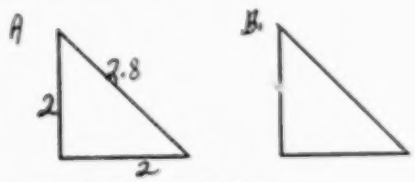
Answer; 8 feet

Level 8 Classification - Geometry - Triangles/Congruence/Similarity	41 Descriptor - Pythagorean Theorem Role, Student

		65370	

OBJECTIVE: Given the dimensions of a geometric figure, the student will write the dimensions of a congruent figure.

SAMPLE ITEM: Given the dimensions for figure B to make it congruent to figure A.



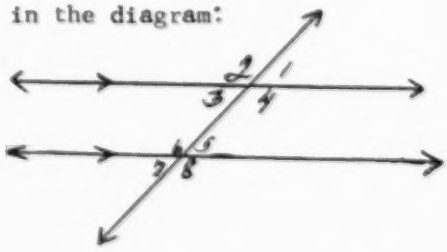
Answer: 2, 2, and 2.8

Level 8 Classification - Geometry - Triangles/Congruence/Similarity	41 Descriptors - Congruence Role, Student

		65375	

OBJECTIVE: Given a diagram containing at least two parallel lines and a transversal, the student will identify two pairs of congruent angles.

SAMPLE ITEM: Identify the congruent angles in the diagram:



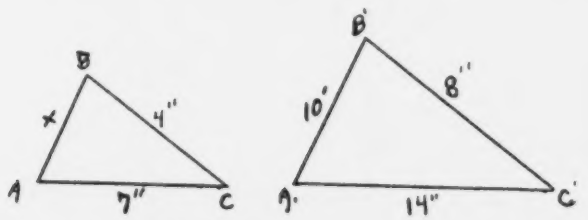
Answer: $\angle 1 \cong \angle 3 \cong \angle 5 \cong \angle 7$
$\angle 2 \cong \angle 4 \cong \angle 6 \cong \angle 8$

Level 8 Classification - Geometry Triangles/Congruence/Similarity	41 Descriptors - Congruence Role, Student

		6 5 3 8 0		

OBJECTIVE: Given two similar triangles, the student will find the length of a missing side.

SAMPLE ITEM: Given $\triangle ABC \sim \triangle A'B'C'$. Find the length of $\overline{AB}$.



Answer: 5 inches

Level 8
Classification - Geometry - Triangles/Congruence/Similarity

41 Descriptor - Similarity

Role, Student

		6 5 3 8 5		

OBJECTIVE: Given a verbal problem involving similar triangles, the student will find the solution.

SAMPLE ITEM: A vertical pole casts a shadow of 15 feet at the same time that a vertical 8-foot rod casts a shadow of 24 feet How high is the pole?

Answer: 5 feet

Level 8
Classification - Geometry - Triangles/Congruence/Similarity

41 Descriptor - Similarity

Role, Student

Problem Solving/Word Problems

		6 5 3 9 0	

OBJECTIVE: Given a word problem with whole numbers, the student will compute and write the answer.

SAMPLE ITEM: Mr. Rosen has 120 chickens. On each day Mr. Rosen collects 100 eggs. How many eggs does Mr. Rosen collect in 2 weeks?

Answer: 1400 eggs

Level 8 Classification: Problem Solving/Word Problems - Problems involving Operations on Whole Numbers	41 Descriptor - Word Problems - Whole Numbers Role, Student

		6 5 3 9 5		

OBJECTIVE: Given a word problem involving rational numbers, the student will solve and write the answer in simplest form.

SAMPLE ITEM: Three boys received $5 for a job. If Tom worked 3 hours, Jim worked $2\frac{1}{2}$ hours, and Will worked $4\frac{1}{2}$ hours, how much did Tom earn if the money was divided according to the time worked?

Answer: $1.50

Level 8 Classification: Problem Solving/Word Problems-Problems involving Operations on Fractions	41 Descriptor - Word Problems-Fractions Role, Student

		6 5 4 0 0		

OBJECTIVE: Given a decimal numeral, the student will write the number of significant digits.

SAMPLE ITEM: Write the number of significant digits in the decimal numeral 8.016.

Answer: 4

Level 8 Classification: Problem Solving/Word Problems - Problems involving Operations on Decimals	41 Descriptor - Word Problems - Decimals Role, Student

		6 5 4 0 5	

OBJECTIVE: Given a verbally stated problem involving directed rational numbers, the student will find the result.

SAMPLE ITEM: If Chris had $122.50 in her checking account, wrote out checks for $16.43, $27.19, and $46.95, and deposited a $232.50 check and $75 in cash, find her balance.

Answer: $339.43

Level 8 Classification - Problem Solving/Word Problems, Problem involving Operations on Real Numbers	41 Descriptor - Word Problems Involving Real Numbers Role, Student

		6 5 4 1 0	

OBJECTIVE: Given a verbal problem involving percent increase or percent decrease, the student will solve the problem.

SAMPLE ITEM: Harry had 60 marbles and won 15 from Fred. This represented an increase of how many percent of the original number of marbles Harry had?

Answer: 25%

Level 8 Classification - Problem Solving/Word Problems, Problems involving Percent/ Proportion/Ratio	41 Descriptor - Word Problems - Ratio-Proportion-Percent Role, Student

		6 5 4 1 3		

OBJECTIVE: Given a word problem involving a proportion, the student will solve and write the solution.

SAMPLE ITEM: In a survey of an Upper Hudson Valley village, it was found that 2 out of every 5 people were farmers. If the population of the village of Haines Falls is 10,000 people, how many people there are farmers, assuming the same ratio holds?

Answer: 4,000 people

Level 8 Classification - Problem Solving/Word Problems, Problems involving Percent/ Proportion/Ratio	41 Descriptor - Word Problems - Ratio-Proportion-Percent Role, Student

		6 5 4 2 0		

OBJECTIVE: Given a word problem involving a ratio, the student will solve and write the solution.

SAMPLE ITEM: The ratio of a champion athlete's body length (height) to the distance he can broad jump is 2:9. Using this ratio, how far could a 1" cricket jump?

Answer: $4\frac{1}{2}$ in.

Level 8 Classification - Problem Solving/Word Problems, Problems involving Percent/ Proportion/Ratio	41 Descriptor - Word Problems - Ratio-Proportion-Percent Role, Student

		6 5 4 2 5	

OBJECTIVE: Given a word problem involving a percent, the student will compute and write the interest, discount, commission, or taxes.

SAMPLE ITEM: Mr. Smith invested $63,000 at 7% for one year in the Westchester Bird Watching League. How much interest did his money earn for the year?

Answer: $4,410

Level 8 Classification - Problem Solving/Word Problems, Consumer Mathematics	41 Descriptor - Word Problems - Consumer Mathematics Role, Student

		6 5 4 3 0	

OBJECTIVE: Given a verbal expression, the student will rename it as an equivalent open number expression.

SAMPLE ITEM: Write an open number expression for 13 less than twice X.

Answer: $2x - 13$

Level 8 Classification - Problem Solving/Word Problems, Algebra	41 Descriptor - Word Problems - Involving Algebra Role, Student

		6 5 4 3 5	

OBJECTIVE: Given a problem involving operations with integers, the student will compute and write the solution to the problem.

SAMPLE ITEM: The temperature in Watertown during one winter day in 1970 dropped to 25 degrees below zero. The next day it rose 35 degrees. What was the resulting temperature?

Answer: 10 degrees (above zero)

Level 8 Classification - Problem Solving/Word Problems, Integers	41 Descriptor - Word Problems - Integers Role, Student

Algebra

682

		6 5 4 4 0		

OBJECTIVE: Given an open number sentence, the student will compute and write the solution using the correct order of operations.

SAMPLE ITEM: Compute and write the answer to the following:

$$8 + 3 \times 3 - 7 + 6 \div 3 = \square$$

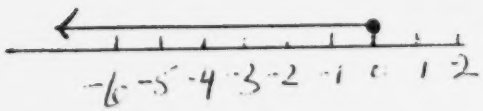
Answer: 12

Level 8 Classification - **Algebra** - Number Sentences/Open Sentences	41 Descriptor - Finding Solution Sets Of Open Sentences Role, Student

		6 5 4 4 5		

OBJECTIVE: Given a graph of an inequality in one variable, the student will write the number sentence which represents the graph.

SAMPLE ITEM: Write the inequality represented by the following:



Answer: x ≤ 0

Level 8 Classification - Algebra - Number Sentences/Open Sentences	41 Descriptor - Solving Inequalities Role, Student

		65450	

OBJECTIVE: Given a verbal sentence, the student will write an open number sentence for the given verbal description.

SAMPLE ITEM: Write an open number sentence for: 10 less than a number Y is 16.

Answer: Y - 10 = 16

Level 8 - Algebra - Number Sentences/ Open Sentences

41 Descriptor - Writing Open Sentences from Verbal Description

Role, Student

		65455	

OBJECTIVE: Given a 2-step problem, the student will write the equation necessary to solve the problem.

SAMPLE ITEM: Write the equation necessary to solve the following problem:

Two times a certain number is 16 more than the number. Find the number.

Answer: $2x = 16 + x$

Level 8 - Algebra - Number Sentences/ Open Sentences

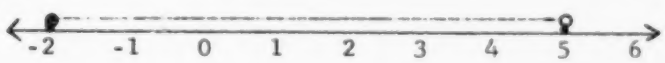
41 Descriptor - Writing Open Sentences From Verbal Description

Role, Student

		65460	

OBJECTIVE: Given a number line graph, the student will interpret the graph and write an open number sentence.

SAMPLE ITEM: Interpret the graph below by writing an open number sentence in terms of X and using real numbers.



Answer: $-2 \leq x < 5$

Level 8 Classification - Algebra - Number Sentences/Open Sentences	41 Descriptor - Writing Open Sentences from Verbal Description Role, Student

		65465	

OBJECTIVE: Given an inequality, the student will compute and write the solution set.

SAMPLE ITEM: Write the solution set for the following open number sentence when the replacement set is the set of all positive integers.

$x + 2 < 3$

Answer: $\{\}$ or $\emptyset$

Level 8 Classification - Algebra - Number Sentences/Open Sentences	41 Descriptor - Writing Open Sentences from Verbal Description Role, Student

		65470	

OBJECTIVE: Given an expression with directed rational numbers, the student will use the operations of addition, subtraction, multiplication, and division to find the result.

SAMPLE ITEM: Find the result:

$$-\frac{2}{3} + 5 - \left(\frac{1}{6}\right) - \frac{7}{5} \div \frac{42}{25}$$

Answer: $3\frac{1}{3}$

Level 8
Classification - Algebra - (Use of Parentheses) - Order of Operations

41 Descriptor - Order of Operations

Role, Student

		65475	

OBJECTIVE: Given an equation such as ☐ % x 25 = 5, the student will solve for the unknown.

SAMPLE ITEM: Solve: ☐ % x 25 = 5

Answer: 20

Level 8
Classification - Algebra - Solving Equations

41 Descriptor - Finding Solution Sets of Open Sentences

Role, Student

		6 5 4 8 0	

OBJECTIVE: Given an equation such as 30% x [ ] = 25, the student will solve for the unknown.

SAMPLE ITEM: Solve: 50% x [ ] = 6

Answer: 12

Level 8 Classification - Algebra, Solving Equations	41 Descriptor - Finding Solution Sets of Open Sentences Role, Student

		6 5 4 8 5	

OBJECTIVE: Given an equation such as 35% x 62 = [ ], the student will solve for the unknown.

SAMPLE ITEM: Solve for the unknown: 25% x 842 = [ ]

Answer: 210.5

Level 8 Classification - Algebra, Solving Equations	41 Descriptor - Finding Solution Sets of Open Sentences Role, Student

		6 5 4 9 0	

OBJECTIVE: Given an equation, the student will compute and write the solution set.

SAMPLE ITEM: The solution set for the following equation is:

$$2y - 6 = y + 3$$

Answer: $\{9\}$

Level 8 Classification - Algebra, Solving Equations	41 Descriptor - Solving Equations Role, Student

		6 5 4 9 5	

OBJECTIVE: Given an equation in which one or both members must be simplified, the student will find the solution.

SAMPLE ITEM: Solve: $3x - 5 + x = 3$

Answer: $x = 2$

Level 8 Classification - Algebra, Solving Equations	41 Descriptor - Solving Equations Role, Student

		6 5 5 0 0	

OBJECTIVE: Given an equation with the variable in both members, the student will solve the equation.

SAMPLE ITEM: Solve: $2x + 5 = 3x + 4$

Answer: $x = 1$

Level 8 Classification - Algebra, Solving Equations	41 Descriptor - Solving Equations Role, Student

		6 5 5 0 5	

OBJECTIVE: Given an appropriate open number sentence, the student will solve the sentence using the addition axiom.

SAMPLE ITEM: Solve: $x - 7 = 24$

Answer: $x = 31$

Level 8 Classification - Algebra, Solving Equations	41 Descriptor - Solving Equations Role, Student

		6 5 5 1 0	

OBJECTIVE: Given an appropriate open number sentence, the student will solve the sentence using the subtraction axiom.

SAMPLE ITEM: Solve: $y + 34 = 107$

Answer: $y = 73$

Level 8 Classification - Algebra, Solving Equations	41 Descriptor - Solving Equations Role, Student

		6 5 5 1 5	

OBJECTIVE: Given an appropriate open number sentence, the student will solve the sentence using the multiplication axiom.

SAMPLE ITEM: Solve: $\frac{x}{14} = 31$

Answer: $x = 434$

Level 8 Classification - Algebra, Solving Equations	41 Descriptor - Solving Equations Role, Student

		6 5 5 2 0	

OBJECTIVE: Given an appropriate open number sentence, the student will solve the sentence using the division axiom.

SAMPLE ITEM: Solve: $13x = 546$

Answer: $x = 42$

Level 8 Classification - Algebra, Solving Equations	41 Descriptor - Solving Equations Role, Student

		6 5 5 2 5	

OBJECTIVE: Given an appropriate open number sentence, the student will solve the sentence using more than one axiom.

SAMPLE ITEM: Solve: $12x - 15 = 117$

Answer: $x = 11$

Level 8 Classification - Algebra, Solving Equations	41 Descriptor - Solving Equations Role, Student

		6 5 5 3 0	

OBJECTIVE: Given the value of the variable and an open number phrase, the student will evaluate the phrase.

SAMPLE ITEM: Evaluate $\frac{1}{n}(n + 4)$ when n is 2.

Answer: 3

Level 8 Classification - Algebra, Substitution: Equations, Formulae, Expression	41 Descriptor - Evaluating Expressions Role, Student

		6 5 5 3 5	

OBJECTIVE: Given an appropriate algebraic expression, the student will write the number of terms contained in the expression.

SAMPLE ITEM: How many terms are there in the expression $\frac{x}{2} + y + 1$?

Answer: 3

Level 8 Classification - Algebra, Substitution: Equations, Formulae, Expression	41 Descriptor - Algebraic Expressions and Simplification Role, Student

		6 5 5 4 0	

OBJECTIVE: Given an algebraic expression, the student will simplify it by combining like terms.

SAMPLE ITEM: Simplify: $x + y + 4x - 3y$

Answer: $5x - 2y$

Level 8 Classification - Algebra, Substitution:Equations,Formulae, Expression	41 Descriptor - Algebraic Expressions and Simplification Role, Student

		6 5 5 4 5	

OBJECTIVE: Given an algebraic expression, the student will simplify it by using the distributive property.

SAMPLE ITEM: Multiply and combine like terms:

$3(x + y) + 4x$

Answer: $7x + 3y$

Level 8 Classification - Algebra, Substitution:Equations, Formulae, Expression	41 Descriptor - Algebraic Expressions and Simplification Role, Student

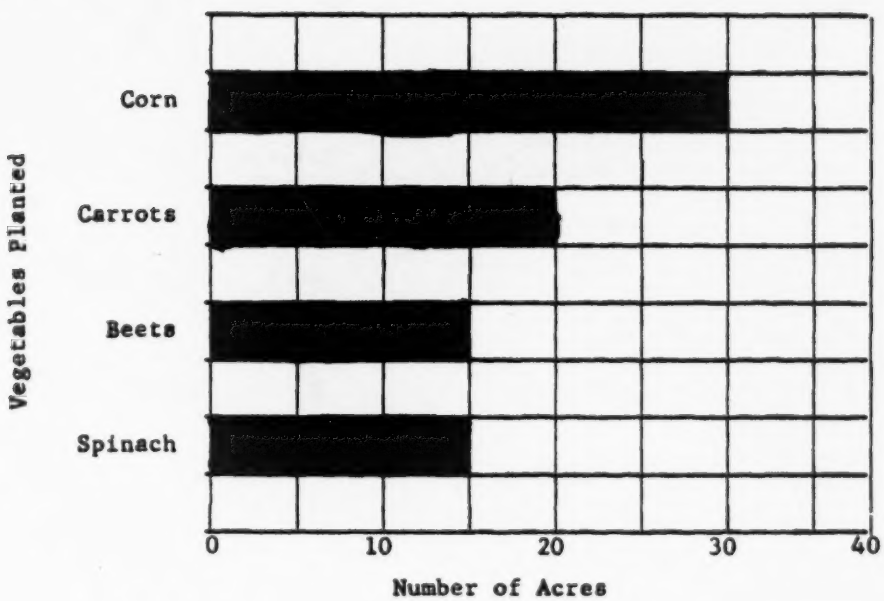
Statistics and Probability

694

		6 5 5 5 0		

OBJECTIVE: Given a bar graph, the student will interpret the graph as indicated.

SAMPLE ITEM: The accompanying bar graph shows the number of acres of different vegetables that a farmer planted during one season. How many acres of carrots were planted?



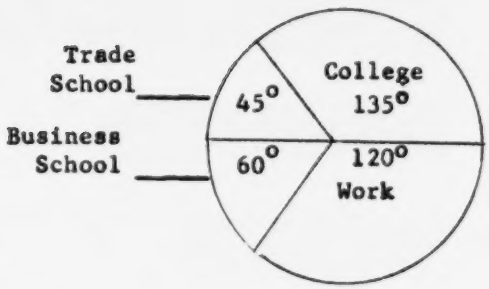
Answer: 20 acres

Level 8 Classification - Statistics and Probability, Graphs and Tables	41 Descriptor - Interpretation of Bar Graphs Role, Student

		6 5 5 5 5	

OBJECTIVE: Given a circle graph, the student will interpret the graph as indicated.

SAMPLE ITEM: The senior class committee of Highview High School posted the accompanying graph to show what the members of the graduating class planned to do after graduation. Using the number of degrees shown for each angle, what fractional part of the graduating class planned to go to trade school?



Answer: $\frac{1}{8}$

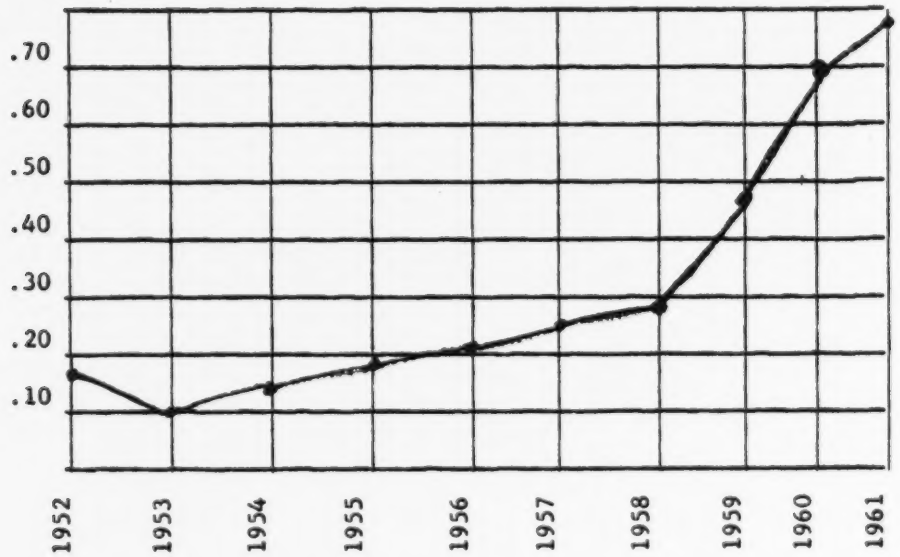
Level 8 Classification - Statistics and Probability, Graphs and Tables	41 Descriptor - Interpretation of Circle Graphs Role, Student

		6 5 5 6 0	

OBJECTIVE: Given a broken line graph, the student will intepret the graph as indicated.

SAMPLE ITEM: The accompanying graph shows the cash dividends per share that a large company paid to its stockholders during the years 1952 through 1961. In what year was the lowest dividend paid?

CASH DIVIDEND PAID PER SHARE



Answer: 1953

Level 8 Classification - Statistics and Probability, Graphs and Tables	41 Descriptor - Interpretation of Line Graphs Role, Student

		6 5 5 6 5	

OBJECTIVE: Given a set of items in a list of data, the student will find the mean.

SAMPLE ITEM: Ellen's test scores for the year were: 85, 75, 80, 90, 80, 90, 85, 65, 85, 80, 75, 70, 100, 90, 85. Find the mean.

Answer: $82\frac{1}{3}$

Level 8 Classification - Statistics and Probability, Mean	41 Descriptor - Finding the Mean Role, Student

		6 5 5 7 0	

OBJECTIVE: Given a list of data and the group of intervals, the student will find the mode of the data.

SAMPLE ITEM: Find the mode of the following:
10, 20, 30, 40, 59, 60, 70, 80, 90, 90, 100

Answer: 90

Level 8 Classification - Statistics and Probability, Mode/Median	41 Descriptor - Finding Mode or Median Role, Student

		6 5 5 7 5	

OBJECTIVE: Given a list of data, the student will find the median.

SAMPLE ITEM: Find the median of 7, 3, 14, 11, 13, 18, 6, 2, 10, 21, 17.

Answer: 11

Level 8 Classification - Statistics and Probability, Mode/Median	41 Descriptor - Finding Mode or Median Role, Student

		6 5 5 8 0	

OBJECTIVE: Given a set of items in a list of data, the student will find the median and the mode.

SAMPLE ITEM: The highest temperature taken on April 10 was 71^{o}. Temperature readings were taken for the following ten consecutive days as follows: 77^{o}, 74^{o}, 70^{o}, 77^{o}, 81^{o}, 68^{o}, 71^{o}, 75^{o}, 77^{o}, 75^{o}. Find the median and the mode of the eleven readings.

Answer: Median: 75^{o}
Mode: 77^{o}

Level 8 Classification - Statistics and Probability, Mode/Median	41 Descriptor - Finding Mode or Median Role, Student

		6 5 5 8 5	

OBJECTIVE: Given a set of events, the student will express in fractional form the probability that a particular event will occur.

SAMPLE ITEM: From the set 2, 4, 7, 18, 9, 16, write the fraction to name the probability of obtaining an even number if a number is picked by chance.

Answer: $\frac{4}{6}$ or $\frac{2}{3}$

Level 8 Classification - Statistics and Probability, Probability	41 Descriptor - Probability Role, Student

		6 5 5 9 0	

OBJECTIVE: Given a permutation problem involving two digit numbers less than 25, the student will solve it.

SAMPLE ITEM: In how many ways can Robert, Steve, and Tom be assigned to first, second, and third base of the baseball diamond?

Answer: 6

Level 8 Classification - Statistics and Probability, Probability	41 Descriptor - Probability Role, Student

		6 5 5 9 5	

OBJECTIVE: Given two events, the student will name the probability of the two independent events happening at the same time.

SAMPLE ITEM: If you had a hat containing 4 marbles, one red, one white, one blue, and one green, what is the probability of picking a green marble first and then a red marble?

Answer: $\frac{1}{12}$

Level 8 Classification - Statistics and Probability, Probability	41 Descriptor - Probability Role, Student

		6 5 6 1 0	

OBJECTIVE: Given a description of a probability experiment, the student will state the probability of the outcome.

SAMPLE ITEM: What is the probability of selecting the 3 of hearts from a deck of 52 cards?

Answer: $\frac{1}{52}$

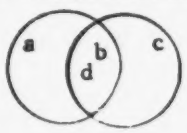
Level 8 Classification - Statistics and Probability, Probability	41 Descriptor - Probability Role, Student

LEVEL 8

		6 7 0 0 0	

OBJECTIVE: Given a Venn diagram, the student will select the set which represents the union or intersection.

SAMPLE ITEM: Select the intersection of the two sets.



(A) $\{a, b, c\}$ (B) $\{a, b, d\}$

(C) $\{b, d\}$ (D) $\{a, b, c, d\}$

Answer: (C)

Level 8 Classification - Sets, Union and Intersection/Disjoint/ Pictorial Representation	41 Descriptor - Intersection and Union of Sets Role, Student

		6 7 0 0 5	

OBJECTIVE: Given a list of subsets, the student will select the original set.

SAMPLE ITEM: Select the original set of the following subsets.

$$\{a, b\} \quad \{a\}, \{b\}, \emptyset$$

(A) $\{a, b\}$ (B) $\{\}$ (C) $\{a\}$ (D) $\{b\}$

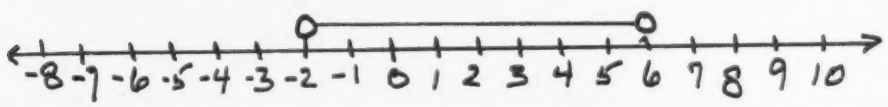
Answer: (A)

Level 8 Classification - Sets, Subsets - Empty Sets	41 Descriptor - Determining Subsets Role, Student

		6 7 0 1 5	

OBJECTIVE: Given the graph of an inequality in one variable, the student will select the number sentence which represents the graph.

SAMPLE ITEM: This is a graph of:



(A) $-2 < x < 6$ (C) $-2 < x \leq 6$
(B) $-2 \leq x \leq 6$ (D) $-2 \leq x < 6$

Level 8 Classification - Number, Numeral, and Numeration Systems, Number Line/Inequalities	41 Descriptor - Inequalities on Number Line Role, Student

		6 7 0 2 0	

OBJECTIVE: Given any number with one digit underlined, the student will select the value of the underlined digit.

SAMPLE ITEM: Select the value of the underlined digit 23<u>8</u>.

(A) 8 tenths (B) 80 (C) 8 hundred (D) 8

Answer: (D)

Level 8 Classification - Number, Numeral, and Numeration Systems, Place Value	41 Descriptor - Place Value Role, Student

		6 7 0 2 5	

OBJECTIVE: Scientific notation: find the exponent for a five-digit whole number written in scientific notation.

SAMPLE ITEM: Find the exponent n:

$$80{,}023 = 8.0023 \times 10^{n}$$

(A) n = 3
(B) n = 4
(C) n = -4
(D) n = -5

Level 8 Classification - Number, Numeral, and Numeration Systems, Scientific Notation	41 Descriptor - Scientific Notation Role, Student

		6 7 0 3 5	

OBJECTIVE: Given a list of four addends of four digits or less, the student will select the sum.

SAMPLE ITEM: Add:

$$\begin{array}{r} 23 \\ 27 \\ 41 \\ \underline{39} \end{array}$$

(A) 120 (B) 130 (C) 129 (D) 110

Answer: (B)

Level 8 Classification - Whole Numbers, Addition	41 Descriptor - Adding Whole Numbers Role, Student

		6 7 0 4 0	

OBJECTIVE: Given a minuend and a subtrahend of six digits or less, the student will select the difference.

SAMPLE ITEM: Select the difference: 285 - 186

(A) 199 (B) 99 (C) 186 (D) 98

Answer: (B)

Level 8 Classification - Whole Numbers, Subtraction	41 Descriptor - Subtraction Whole Nos. With Borrowing Role, Student

		6 7 0 4 5	

OBJECTIVE: Given a divisor of three or less digits and a dividend of four or more digits, the student will select the quotient.

SAMPLE ITEM: Divide: $1036 \div 28$

(A) 37 (B) 73 (C) 46 (D) 28

Answer: (A)

Level 8 Classification - Whole Numbers, Division	41 Descriptor - Division Without Remainder Role, Student

		6 7 0 5 0	

OBJECTIVE: Given a two digit number, the student will identify the whole number factors of that number.

SAMPLE ITEM: List the three pairs of factors of 20.

(A) 1, 20
2, 10
4, 5

(B) 3, 10
2, 15
1, 30

(C) 3, 15
5, 9
1, 45

(D) 1, 15
3, 5
2, 7

Level 8 Classification - Whole Numbers, Factors/Common Factors/G.C.F./ Divisibility Rules	41 Descriptor - Factors Role, Student

		6 7 0 5 5	

OBJECTIVE: Given three numbers, the student will select the least common multiple (L.C.M.).

SAMPLE ITEM: Find the least common multiple of 4, 6, 10.

(A) 10 (B) 20 (C) 24 (D) 60

Answer: (D)

Level 8 Classification - Whole Numbers, Multiples/Common Multiples/L.C.M.	41 Descriptor - Lowest Common Multiple Role, Student

		6 7 0 7 5	

OBJECTIVE: The student will find a fraction equivalent to a given fraction.

SAMPLE ITEM: Equivalent means:~ names the same number.

3/8 is equivalent to:

(A) 12/14
(B) 6/32
(C) 12/32
(D) 11/15

Answer: (C)

Level 8 Classification - Fractions (Positive Rationals), Equivalent Fractions	41 Descriptor - Writing Equivalent Fractions Role, Student

		6 7 0 8 0	

OBJECTIVE: The student will add three fractions with unlike denominators.

SAMPLE ITEM: Find the value of n:

Add: 3/8 + 1/12 + 2/9 = n

(A) n = 6/29
(B) n = 20/26
(C) n = 49/72
(D) n = 35/56

Answer: (C)

Level 8 Classification - Fractions (Positive Rationals), Addition	41 Descriptor - Adding Unlike Fractions Role, Student

		6 7 0 6 0	

OBJECTIVE: The student will find the prime factored form of a whole number.

SAMPLE ITEM: The prime factored form of 124 is:

(A) $2^1 \times 62$

(B) $2^2 \times 31$

(C) 4×31

(D) $12^2 \times 1$

Level 8 Classification - Whole Numbers, Prime/Composite	41 Descriptor - Prime Factorization Role, Student

		6 7 0 6 5	

OBJECTIVE: Given a list of sets, the student will select the set of composite or prime numbers.

SAMPLE ITEM: Select the set of only prime numbers.

(A) $\{1, 3, 5, 7, 9\}$

(B) $\{3, 5, 7, 9\}$

(C) $\{3, 5, 7\}$

(D) $\{5, 7, 9, 11\}$

Answer: (C)

Level 8 Classification - Whole Numbers, Prime/Composite	41 Descriptor - Identifying Numbers as Prime or Composite Role, Student

		6 7 0 8 5	

OBJECTIVE: Given a subtraction example, the student will select the difference.

SAMPLE ITEM: Subtract: $2\frac{3}{5} - 1\frac{1}{2}$

(A) $2\frac{2}{5}$ (C) $1\frac{1}{10}$

(B) $1\frac{2}{5}$ (D) $2\frac{1}{10}$

Answer: (C)

Level 8 Classification - Fractions (Positive Rationals), Subtraction	41 Descriptor - Subtracting Mixed Numbers Role, Student

		6 7 0 9 0	

OBJECTIVE: The student will subtract a fraction from a mixed number (both positive).

SAMPLE ITEM: Subtract: Find the value of n:

$$2\frac{3}{8} - \frac{7}{8} = n$$

(A) $n = 1\frac{1}{2}$ (C) $n = 2\frac{4}{8}$

(B) $n = 1\frac{3}{8}$ (D) $n = 2\frac{1}{2}$

Answer: (A)

Level 8 Classification - Fractions (Positive Rationals), Subtraction	41 Descriptor - Subtracting Mixed Numbers Role, Student

		6 7 0 9 5	

OBJECTIVE: The student will multiply three fractions (one negative, two positive)

SAMPLE ITEM: Multiply: Find the value of n:

$(\frac{-12}{7})(\frac{4}{9})(\frac{7}{8}) = n$

(A) $n = \frac{-2}{3}$ (C) $n = \frac{48}{72}$

(B) $n = \frac{336}{504}$ (D) $n = \frac{-13}{18}$

Level 8 Classification - Fractions (Positive Rationals), Multiplication	41 Descriptor - Multiplying Fractions Role, Student

		6 7 1 0 5	

OBJECTIVE: The student will add four decimals (tenths through thousandths).

SAMPLE ITEM: Add: Find the value of n:

$27.119 + 6.3 + 32.406 + .979 = n$

(A) $n = 23.0425$ (C) $n = 66.804$

(B) $n = 60.567$ (D) $n = 66.794$

Answer: (C)

Level 8 Classification - Decimals, Addition	41 Descriptor - Adding Decimals Role, Student

		6 7 1 1 0	

OBJECTIVE: The student will multiply a decimal numeral (hundredths) by 10,000.

SAMPLE ITEM: Multiply: Find the value of n:

(.62) (10,000) = n

(A) n = 6,200,000 (C) n = 62,000

(B) n = 620,000 (D) n = 6,200

Level 8 Classification - Decimals, Multiplication	41 Descriptor - Multiplying Decimals Role, Student

		6 7 1 1 5	

OBJECTIVE: The student will multiply two decimals each of which is a tenth, a hundredth, or a thousandth.

SAMPLE ITEM: Multiply: Find the value of n:

(4.002) (1.7) = n

(A) n = 428.0214 (C) n = 6.8034

(B) n = 4.0016 (D) n = 8.0034

Level 8 Classification - Decimals, Multiplication	41 Descriptor - Multiplying Decimals Role, Student

		6 7 1 2 0	

OBJECTIVE: The student will recognize the decimal equivalent with non-zero digits to the ten thousandths place equivalent of a common fraction or mixed number.

SAMPLE ITEM: The numeral 1/4 written in decimal form is:

(A) .14 (C) 2.5

(B) .40 (D) .25

Answer: (D)

Level 8 Classification - Decimals, Changing to a Fraction and Vice Versa	41 Descriptor - Changing Fractions to Decimals Role, Student

		6 7 1 2 5	

OBJECTIVE: Given a mixed number, the student will select that mixed number as it appears in decimal form.

SAMPLE ITEM: The numeral $4\frac{2}{5}$ written in decimal form is:

(A) 4.2 (C) 4.4

(B) 4.25 (D) 4.5

Level 8 Classification - Decimals, Changing to a Fraction and Vice Versa	41 Descriptor - Changing Fractions to Decimals Role, Student 147

		6 7 1 3 0	

OBJECTIVE: Given a common fraction, the student will select the equivalent terminating or repeating decimal fraction.

SAMPLE ITEM: Select the equivalent decimal fraction for 3/8.

(A) .75 (C) .375

(B) .125 (D) $2.\overline{6}$

Answer: (C)

Level 8 Classification - Decimals, Changing to a Fraction and Vice Versa	41 Descriptor - Changing Fractions to Decimals Role, Student

		6 7 1 3 5	

OBJECTIVE: Given a terminating or repeating decimal fraction, the student will select the equivalent common fraction.

SAMPLE ITEM: Convert the following repeating decimal fraction to a common fraction:

$.\overline{2}$

(A) 1/5 (C) 22/100

(B) 2/9 (D) 1/4

Answer: (B)

Level 8 Classification - Decimals, Changing to a Fraction and Vice Versa	41 Descriptor - Changing Decimals to Fractions Role, Student

		6 7 1 4 0	

OBJECTIVE: The student will round a decimal (ten-thousandths) to the nearest tenth.

SAMPLE ITEM: 6.4477 rounded to the nearest tenth is:

(A) 6.5 (C) 6.45

(B) 6.44 (D) 6.4

Answer: (D)

Level 8 Classification - Decimals, Rounding Off	41 Descriptor - Rounding Off Decimals Role, Student

		6 7 1 4 5	

OBJECTIVE: The student will find a numeral with a given digit in the ten-thousandths place or the hundred-thousandths place.

SAMPLE ITEM: Which numeral has 6 in the ten-thousandths place?

(A) 26.76224 (C) 11.680766

(B) 7.116920 (D) 14.350612

Level 8 Classification - Decimals, Place Value	41 Descriptor - Place Value in Decimal Notation Role, Student

		6 7 1 5 0	

OBJECTIVE: The student will write a decimal given in words in numeral form or vice versa.

SAMPLE ITEM: The number "twelve and six thousand twenty-one hundred-thousandths" is written:

(A) 12.621 (C) .126211

(B) 12.06021 (D) 12.6021

Level 8 Classification - Decimals, Writing Decimals as words and Vice Versa	41 Descriptor - Changing Words to Decimals Role, Student

		6 7 1 5 5	

OBJECTIVE: The student will arrange two fractions and a decimal or two decimals and a fraction in order of smallest to largest.

SAMPLE ITEM: Arrange 4/5, .62, 1/2 in order of smallest to largest.

(A) 1/2 .62 4/5 (C) 4/5 1/2 .62

(B) .62 1/2 4/5 (D) 4/5 .62 1/2

Level 8 Classification - Decimals, Order (comparing fractions)	41 Descriptor - Comparing Decimal Fractions Role, Student

		6 7 1 6 0	

OBJECTIVE: Given three decimals, two with values in the tenths column and one having values in the hundredths column, the student will select the example which shows them in order of increasing size.

SAMPLE ITEM: Write the numerals 2.0, 2.4, 2.04 in order of increasing size:

(A) 2.04 2.4 2.0

(B) 2.0 2.04 2.4

(C) 2.4 2.04 2.0

(D) 2.0 2.4 2.04

Level 8 Classification - Decimals, Order (comparing Fractions)	41 Descriptor - Comparing Decimals Fractions Role, Student

		6 7 1 7 5	

OBJECTIVE: Given any two integers, the student will select the sum.

SAMPLE ITEM: Add: +8 + -3

(A) + 11 (B) - 11 (C) + 5 (D) - 5

Answer: (C)

Level 8 Classification - Integers, Addition	41 Descriptor - Addition of Integers with Unlike Signs Role, Student

		6 7 1 8 0	

OBJECTIVE: The student will subtract a negative integer from a positive integer.

SAMPLE ITEM: Subtract: Find the value of n:

157 - (-49) = n

(A) n = -106 (C) n = 206

(B) n = 108 (D) n = 106

Answer: (C)

Level 8 Classification - Integers, Subtraction	41 Descriptor - Subtraction of Integers Role, Student

		6 7 1 8 5	

OBJECTIVE: Given any two integers, the student will select the difference.

SAMPLE ITEM: Subtract: -7 -(-4)

(A) -3 (B) +3 (C) -11 (D) + 11

Answer: (A)

Level 8 Classification - Integers, Subtraction	41 Descriptor - Subtraction of Integers Role, Student

		6 7 1 9 0	

OBJECTIVE: The student will multiply two integers (all negative).

SAMPLE ITEM: Multiply: Find the value of n:

$$(-2)\ (-8) = n$$

(A) $n = -16$ (C) $n = 10$

(B) $n = 16$ (D) $n = -10$

Answer: (B)

Level 8 Classification - Integers, Multiplication	41 Descriptor - Multiplication of Integers Role, Student

		6 7 1 9 5	

OBJECTIVE: Given any two integers, the student will select the product.

SAMPLE ITEM: Multiply: $+4 \times -6 =$

(A) -24 (B) +24 (C) +10 (D) -10

Answer: (A)

Level 8 Classification - Integers, Multiplication	41 Descriptor - Multiplication of Integers Role, Student

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		6 7 2 0 0	

OBJECTIVE: The student will divide two negative integers.

SAMPLE ITEM: Divide: Find the value of n:

$$-98 \div -14 = n$$

(A) n = 7 (C) n = 9

(B) n = -7 (D) n = -8

Answer: (A)

Level 8 Classification - Integers, Division	41 Descriptor - Division of Integers Role, Student

		6 7 2 0 5	

OBJECTIVE: Given any two integers, the student will select the quotient.

SAMPLE ITEM: Divide: $-18 \div +6$

(A) +3 (B) -3 (C) -6 (D) -12

Answer: (B)

Level 8 Classification - Integers, Division	41 Descriptor - Division of Integers Role, Student

		6 7 2 1 0	

OBJECTIVE: The student will find the additive inverse (integers).

SAMPLE ITEM: Find the value of n:

$$-17 + n = 0$$

(A) n = 0 (C) n = 17

(B) n = -1 (D) n = -17

Level 8 Classification - Integers, Properties	41 Descriptor - Inverses - Integers Role, Student

		6 7 2 1 5	

OBJECTIVE: Given four number sentences, the student will select the example which uses the inverse for addition.

SAMPLE ITEM: Select the number sentence which uses the additive inverse.

(A) +5 + 0 = + 5 (C) -5 + +5 = 0

(B) +5 x +1 = +5 (D) -5 x 0 = 0

Answer: (C)

Level 8 Classification - Integers, Properties	41 Descriptor - Inverses - Integers Role, Student

		6 7 2 2 0	

OBJECTIVE: Given four sets of operations, the student will select the set which states which operations the integers are closed under.

SAMPLE ITEM: Select the set of operations for which the integers are closed.

(A) $(-, \div, x)$ (C) $(x, -, +)$

(B) $(\div, x, -)$ (D) $(+, x, \div)$

Answer: (C)

Level 8 Classification - Integers, Properties	41 Descriptor - Closure - Integers Role, Student

		6 7 2 2 5	

OBJECTIVE: Given four number sentences involving addition or multiplication, the student will select the example which uses the commutative property.

SAMPLE ITEM: Select the example which uses the commutative property for multiplication.

(A) $-2 \times +3 = +3 \times -2$

(B) $-2 + +3 = +3 + -2$

(C) $-2 + (+3 + -4) = (-2 + +3) + -4$

(D) $-2 \times (+3 + -4) = (-2 \times +3) + (-2 \times -4)$

Answer: (A)

Level 8 Classification - Integers, Properties	41 Descriptor - Commutative Property - Integers Role, Student

		5 7 2 3 0	

OBJECTIVE: Given four number sentences involving addition or multiplication, the student will select the example which uses the associative property.

SAMPLE ITEM: Select the number sentence which uses the associative property for addition.

(A) +3 x (-2 x -4) = (+2 x +4 x -3
(B) +3 x (-2 x -4) = (-2 x -4) x +3
(C) +3 + (-2 + -4) = (+3 + -2) + -4
(D) +4 + +6 = -6 + -4

Answer: (C)

Level 8 Classification - Integers, Properties	41 Descriptor - Associative Property - Integers Role, Student

		6 7 2 3 5	

OBJECTIVE: Given four number sentences, the student will select the example which uses the distributive property.

SAMPLE ITEM: Select the number sentence which uses the distributive property.

(A) +3 x -5 = -5 x +3

(B) +3 + -5 = -5 + +4

(C) +3 + (-5 + +4) = (+3 + -5) + +4

(D) +3 x (-5 + +4) = (+3 x -5) + (+3 x +4)

Answer: (D)

Level 8 Classification - Integers, Properties	41 Descriptor - Distributive Property - Integers Role, Student

		6 7 2 4 0	

OBJECTIVE: Given four number sentences, the student will select the example which uses the identity element for addition or multiplication.

SAMPLE ITEM: Select the number sentence which uses the additive identity.

(A) $6 + 1 = 7$

(B) $6 \times 1 = 6$

(C) $9 + 0 = 9$

(D) $9 \times \frac{1}{9} = 1$

Answer: (C)

Level 8 Classification - Integers, Properties	41 Descriptor - Identity - Integers Role, Student

		6 7 2 5 0	

OBJECTIVE: The student will divide a negative fraction by a negative fraction.

SAMPLE ITEM: Divide: Find the value of n:

$$\frac{(-15)}{(8)} \div \frac{(-5)}{(2)} = n$$

(A) $n = \frac{3}{4}$

(B) $n = \frac{-15}{40}$

(C) $n = \frac{-6}{8}$

(D) $n = \frac{15}{8}$

Level 8 Classification - Real Numbers, Division	41 Descriptor - Division of Real Numbers Role, Student

		6 7 2 5 5		

OBJECTIVE: Given a list of number sentences, the student will select the example which uses the multiplicative inverse. (Reciprocal)

SAMPLE ITEM: Select the number sentence which uses the multiplicative inverse. (Reciprocal)

(A) $+3/5 + -3/5 = 0$
(B) $4/5 + 0 = 4/5$
(C) $3/5 \times 5/3 = 1$
(D) $3/5 \times 1 = 3/5$

Answer: (C)

Level 8 Classification - Real Numbers, Properties	41 Descriptor - Inverse - Real Numbers Role, Student

		6 7 2 6 0		

OBJECTIVE: The student will find the square root of a perfect square.

SAMPLE ITEM: Find the value of n: $\sqrt{144} = n$

(A) $n = 72$ (C) $n = 11$

(B) $n = 14$ (D) $n = 12$

Level 8 Classification - Real Numbers, Square Root/Irrational Numbers	41 Descriptor - Finding Square Root Role, Student

		6 7 2 7 0	

OBJECTIVE: Given a number, the student will select a given percent of that number.

SAMPLE ITEM: What is 20% of 50?

(A) 10 (B) 5 (C) 1000 (D) 1

Answer: (A)

Level 8 Classification - Ratio, Proportion, and Percent, Percent	41 Descriptor - Computing Percents Role, Student

		6 7 2 7 5	

OBJECTIVE: The student will write a given ratio in percent form.

SAMPLE ITEM: The ratio 1/6 written in percent form is:

(A) $30\frac{2}{3}\%$ (C) $16\frac{2}{3}\%$

(B) $36\frac{9}{25}\%$ (D) $60\frac{1}{3}\%$

Level 8 Classification - Ratio, Proportion, and Percent, Percent	41 Descriptor - Converting Percent/Decimal/Ratio/Fraction Role, Student

		6 7 2 8 0	

OBJECTIVE: The student will find the number which is a given percent of a given number.

SAMPLE ITEM: Find the value of X:

30% of 80 = X

(A) x = 50 (C) x = 40

(B) x = 24 (D) x = 110

Level 8 Classification - Ratio, Proportion, and Percent, Percent	41 Descriptor - Computing Percents Role, Student

		6 7 2 8 5	

OBJECTIVE: The student will find the percent a given number is of another given number.

SAMPLE ITEM: Find the value of X:

21 is X% of 70

(A) x = 91 (C) x = 49

(B) x = 50 (D) x = 30

Level 8 Classification - Ratio, Proportion, and Percent, Percent	41 Descriptor - Computing Percents Role, Student

		6 7 3 0 0	

OBJECTIVE: Given a number of hours or minutes, the student will select the equivalent number of minutes or hours.

SAMPLE ITEM: Convert 3 hrs. to minutes.

(A) 90 (B) 20 (C) 180 (D) 300

Answer: (C)

Level 8 Classification - Measurement, Time	41 Descriptor - Converting Time Units Role, Student

		6 7 3 1 0	

OBJECTIVE: The student will compute the circumference of a circle given the radius.

SAMPLE ITEM: What is the circumference of a circle if the radius is 5? (use π = 3.14)

(A) 15.7 (C) 31.4

(B) 13.4 (D) 8.14

Level 8 Classification - Geometry, Circles	41 Descriptor - Circumference of a Circle Role, Student

		6 7 3 1 5	

OBJECTIVE: The student will compute the area of a circle whose diameter is given.

SAMPLE ITEM: What is the area of a circle whose diameter is 20cm? (use π = 3.14)

(A) 31.4 sq. cm. (C) 314 sq. cm.

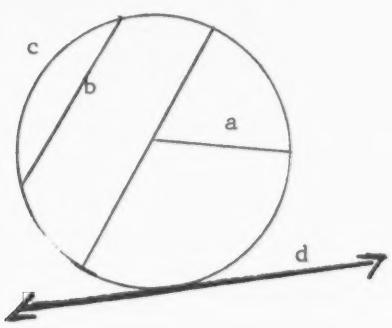
(B) 62.8 sq. cm. (D) 1256 sq. cm.

Level 8 Classification - Geometry, Circles	41 Descriptor - Area of a Circle Role, Student

		6 7 3 2 0		

OBJECTIVE: Given a circle containing a chord, arc, radius, circumference and diameter, the student will select any given one.

SAMPLE ITEM: Select the chord.



(A) a (B) b (C) c (D) d

Answer: (B)

Level 8 Classification - Geometry, Circles	41 Descriptor - Identifying Parts of a Circle Role, Student